ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF BUSINESS ADMINISTRATION

THE EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN PRESCRIPTION BEHAVIOR MEDIATED BY BRAND IMAGE IN THE CASE OF PRIVATE GENERAL HOSPITALS, ADDIS ABABA

BY

BETSELOT YIMER

JULY 2021

ADDIS ABABA

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF DEGREE OF MASTERS OF ART IN BUSINESS ADMINISTRATION.

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DECLARATION

I, the undersigned, declare that this thesis "THE EFFECTS OF PROMOTIONAL MIX ON PHYSICIAN PRESCRIPTION BEHAVIOR MEDIATED BY BRAND IMAGE IN THE CASE OF PRIVATE GENERAL HOSPITALS, ADDIS ABABA" is my original work, prepared under the guidance of Temesgen Belayneh (Ph.D.). All sources of materials used for this thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or full to any other higher learning institution for the purpose of earning any degree.

BetselotYimer

Name	Signature
St, Mary's University, Addis Ababa	May 2021

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a University advisor.

_____	_____
Advisor	Signature
St, Mary's University, Addis Ababa	June 2021

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LIST OF ABBREVIATIONS/ ACRONYMS

PPB	Physician Prescription Behavior
MCs	Marketing Communications
IMC	Integrated Marketing Communications
FMHACA	Food, Medicine, Healthcare Administration and Control Authority
MRs	Medical Representatives
WHO	World Health Organization
CME	Contentious Medical Education
USA	United States of America
DTCA	Direct to Customer Advertisement
PSRs	Pharmaceutical Sales Representatives
PDMA	Prescription Drug Marketing Act
R&D	Research and Development
BRICMT	Brazil, Russia, India, China, Mexico, and Turkey
HIV	Human Immunity Virus
SSA	Sub Saharan African
CAGR	Compound Annual Growth Rate
APF	Addis Pharmaceutical Factory
EPHARM	Ethiopian Pharmaceutical Manufacturing Factory

ABSTRACT

The purpose of this study was to investigate the effects of promotional mix on physician prescription behavior mediated by brand image in the case of private general hospitals in Addis Ababa. Based on the research objectives and proposed hypotheses, quantitative research approach with explanatory research design adopted. Physician had been currently working at private general hospitals in Addis Ababa were taken as a study population. A sample of 150 physicians was selected using convenience sampling technique. Of which 133 valid and usable responses were collected and used for analysis. Primary data from the targeted respondents were collected through self-administered questionnaires, and analyzed using SPSS version 20.0. Both descriptive and inferential statistics were used for analysis of demographic profiles of the respondents, promotional mix, and brand image and physician prescription behavior variables. The results of the findings revealed that all promotional mix elements, except advertising, had positive and significant effect on physician prescription behavior. Amongst them, public relations had relatively the strongest positive and significant effect on prescription behavior of physician. Sales promotion and personal selling had also higher effects next to public relations. Direct marketing was found to be the lest effective promotional mix tool. Moreover, brand image showed a mediating effect on the relationship between promotional mix and physician prescription behavior. It can be concluded that pharmaceutical promotions and brand image of a drug are good predictors of physician prescription behavior pattern.

Key Terms: *Promotional Mix, Brand Image, Physician Prescription Behavior, Pharmaceutical Promotion, Private General Hospital*

CHAPTER ONE

INTRODUCTION

1.1 **Introduction**

Satisfying end users indirectly through third part is the beauty of pharmaceutical marketing. Alike other industries, the limelight of pharmaceutical marketing are to assure the survival and sustainability of the organization by accommodating the needs, wants and ultimately satisfaction of patients through influencing physicians (Sattar and Maqsood, 2013). The complexity of physicians' prescription behaviour along with a wide range of determinant factors enforces wide discourse in pharmaceutical marketing research for searching optimal solutions. Promotional tools as a marketing mix strategy are considered and rigorously implemented by the pharmaceutical companies to influence physician's behavior (Sultana, 2011). Despite the huge investment on promotion of medications, the reputation of the manufacturer or the brand of the drug plays its own mediating role in pursuing the physician prescription behavior. Known brands are relatively easier and less-costlier to promote results in influencing physicians to prescribe a specific brand.

Pharmaceutical companies use different techniques to persuade physicians and make them favour their products. The influence can be expressed either by prescribing the drug or making an inclusion in hospital formularies or treatment guides. While many companies have successfully deployed a plethora of strategies to influence the prescribing behaviour which include extravagant marketing practices like offering vacation/travel expenses; gifts of substantial value; lavish meals and entertainment; offering cash/ commission for prescribing a particular drug. Offering money for drug trial, samples and promotional material, and continuous medical education (CME) funding and honoraria are also other forms of persuading strategies (Wazana, 2000). Similarly, giving away small gifts and trinkets of low values are considered by doctors as the way of promotional interaction from the pharmaceutical companies (Gibbons, 1998). Many of these promotional practices adopted by the pharmaceutical companies may be regarded as unethical but are rampant in this industry.

These marketing strategies help companies imposing an influence on the decision maker either directly or indirectly. The techniques are intended to maximize their profit margins through either the need to promote specific drugs or the need to enhance company reputation through stronger relations with physicians, or both. However, a pharmaceutical company that improves its reputation

is likely to sell more drugs, while a company that enhances the sale of specific drugs will also have improved chances of acquiring positive reputation. Particularly, company reputation or brand image's influence on physician prescription behavior is more pronounced in developing countries (Datta and Dave, 2017). In particular, there is increased concern that a significant population of physicians might be prescribing a narrow range of heavily promoted, but needlessly expensive drugs, or exclusively branded products rather than generic drugs to the detriment of patient welfare. Alongside the concern regarding the growth of pharmaceutical expenditure, there is also a concern regarding irrational or sometimes even harmful prescriptions, especially in developing countries only for sake of the prominence of the European or American origin imported medicines (Kim, 2009).

Brand factors that affect decision to prescribe drugs are likely to be important in determining responses to over-prescription (Morgan, 2006). Brand marketing activities in a pharmaceutical industry are crucial factors in this perspective. The consequence of over-promoted branded drugs issues can result in loss of health and quality of life for patients and society. There is available evidence that pharmaceutical marketing efforts adversely influence prescription as brands affect the prescription behavior of physicians. Thus, governments, firms, and managers are beginning to pay attention to these factors that may affect physician drug decision (Salmi, 2017; Kremer, 2018).

Recently, Salmi(2017) in a review that covered the period between 2005 and 2015, concluded that the marketing efforts of pharmaceutical companies exerted the greatest influence on the prescription of antibiotics by physicians. Kremer (2018) conducted a meta-analysis with the aim of formulating generalizations about the effectiveness of the pharmaceutical promotions, and concluded that these promotions are moderated by product brand and company reputation. A 2019 review reported no evidence of net difference in prescription of branded drugs in Western countries as a function of information (promotion tools) from pharmaceutical companies (WHO, 2019). However, these reviews narrowly focused on the relationship between promotional marketing efforts and physician prescription in general, giving less consideration for the mediating role of brand on the relationship of the two variables.

The aim of this review is to examine the relationship between prescription behavior of physicians, and promotional marketing efforts provided by pharmaceutical companies. In addition, mediator role of drug brand in this relationship will be explored.

1.2 **Statement of The Problem**

To survive in the competitive marketing environment, business organizations need to adopt promotional mix strategies in order to attract and retain customer for long-term relationships. Promotional strategies in marketing comprise basically of message and media strategy, consisting of the appropriate use of branding, logo or slogan through which a company passes across the benefits of its product and services to its target customers (Keller, 2010). No matter how successfully developed product may be, it is worthless except its benefits are made clear and appreciated by the target customers. In this regard, pharmaceutical companies commit a great deal of time and money to marketing in hopes of convincing physicians and pharmacists of the merits of their products (Al-Haddad, 2014).The pharmaceutical industries spend between 15 and 25% of their total budgets on average on promotional activities to position their brands in the minds of physicians. And this proportion is even higher in third world countries in which branded drugs are more favoured rather than generic ones (Laborite, 1985). This indicates that brand image of a drug influences physicians' prescription behavior (Colleen, 2017).

Despite the practice has been commenced while, promotion of prescription drugs in Ethiopia is still at its infancy stage (Samrawit, 2019). In the country, pharmaceutical companies, especially those that deal with prescription drugs operate in a very competitive environment because of the existence of various brands of generic drugs imported from different continents such as Europe, America and Asia. The competitive nature of the business environment makes it mandatory for them to develop and implement strong promotional strategies in order to gain and maintain a reasonable share of the market. However, unlike developed countries, ban of drug advertisement on mass media enforces consumers or patients merely to count on prescribed drugs (Zerihun, 2018). This leads pharmaceutical suppliers to focus on brand promotion to influence doctors through different promotional mix tools.

There are several channels by which a physician may be influenced, including self-influence through research, peer influence, direct interaction with pharmaceutical companies, patients, and public or private insurance companies. Nonetheless, pharmaceutical companies aggressively develop marketing strategies to influence physicians than other stakeholders. These activities are performed by the pharmaceutical companies in two ways like creating the pull strategy and push

strategy. Pull strategy mainly concentrate on the mass media promotions with limited influence to the doctors. But push strategy is the main promotional method followed by many countries where doctor level promotions are more prominent (Wendy, 2007). Country like Ethiopia is utterly towards this strategy where government has not given the provision to do pull strategy.

Drug promotion activity is dissemination of all informational and commitment of persuasive activity by manufacturers and distributers intended to induce the prescription, supply, purchase and or use of medicinal drugs(WHO, 2015).Pharmaceutical companies promote their product through medical representative (MRs) by using drug sample, printed product literature and gifts that helps them to increase acceptability of their product. It is all about informative action which makes physicians aware of new drugs and treatment options (Gönül, 2011). Besides, according to (Samrawit, 2019, Bersah, 2016; Adiam, 2006) some of the most important elements used in promotion are sales promotion, personal selling and public relation. These promotion elements of the organizations include all the relevant activities, materials, and media used by a marketer to inform and remind prospective customers about a particular product offering. However, evidences showed that there is a limit or gap in literature to what extent product brand image or reputation of the company affect the effectively of promotional efforts in the course of influencing prescription behavior of physicians.

The impact of pharmaceuticals promotional strategies on physician prescribing pattern has been studied in different countries and the result revealed that the existence of close relationship between them (Wendy, 2015; Gopal 2012; Turone 2003). The British Medical Journal (2013) devoted a special edition to the relationship between doctors and pharmaceutical companies in limelight of untangling doctors from prominent drug companies promoting their brands. Separate studies by Lurie (2010), Mainour (2012) and Chren, Landefeld and Murray (2014) all found that there was a strong correlation between doctors' tendencies to recommend branded drugs and their receipt of gifts/sponsorship/ non-related payment etc. Studies by Wazana (2010) and Murray (2012) showed that gifts with impregnated brand logos impact on doctors' prescribing practices. Wazana (2014) further examined twenty-nine empirical studies of the impact of interactions between the medical profession and drug brands of Big Parma. According to his studies doctors are more keen prescribing branded drugs with relate to detailing skills, products sampling, scientific materials, relationship with the doctor and CME meeting conducted as promotional tools by the pharmaceutical companies.

In this notion, the aim of this study is to investigate the mediating role of brand image on the relationship between promotional mix tools and prescription behavior of physicians in the case of Ethiopian Pharmaceutical suppliers in Addis Ababa. In this study, the student researcher looks to identify to what extent promotion strategies of pharmaceutical companies will influence on doctors to prescribe the branded drugs. Therefore, the result of this study will help pharmaceutical companies to know the best promotional techniques to influence the most. And other stakeholders will have the understanding of how the brand image of imported drugs influences the physician's results in unnecessary economic burden on the society.

1.3 Objectives of The Study

1.3.1 General Objective

The general objective of the study is the effect of promotional mix tools on physician prescription behavior mediated by drug brand image in Ethiopian pharmaceutical suppliers' context.

1.3.2 Specific Objectives

1- Investigate the effect of advertising on physician prescription behavior

2- evaluate the effect of sales promotion activities on physician prescription behavior

3- analyze the effect of personal selling on physician prescription behavior

4- Evaluate the effect of direct marketing practices on physician prescription behavior

5- Investigate the effect of publicity on physician prescription behavior

6- Analyze the effect of promotional mix on brand image

7- Evaluate the mediating role of brand image on the relationship between promotional mix tools and physician prescription behavior

1.4 Significance of the Study

There are many pharmaceutical companies that are currently marketing their products in Ethiopia. This happens through selected distributors in the country involved in the pharmaceutical business. To sell their products at the consumer level, companies have their own marketing team to influence physician prescription in favour of their specific brands. This study, thus, provides appropriate information to the pharmaceutical industry to identify the effect of sales promotion on prescribing behaviors. Besides, it presents an interesting snapshot of how future physicians in Ethiopia view the

promotional effort by pharmaceutical industry. In this regard, it will be very important for medical students to sharpen their attitude towards detailing, sample drugs, promotional gifts from pharmaceutical industry and attitudes towards pharmaceutical sales representatives (PSRs) is whether favourable due to large amount of money invested by pharmaceutical companies for promotion. The study might also pave the way for further study on the effect of attitude on the prescribing behavior of physicians and thereby track for possible remedy to change, reduce even eliminate the negative attitude medical students and/or practicing physicians have. This study also has its own contribution for both decision makers and researchers in field of medical ethics.

1.5 Scope of the Study

Conceptually, this study focuses on the evaluation of marketing communications' effect on physician prescription behavior mediated by prescribe drug brand image. Thus, the study variables are promotional mix tools namely advertising, sales promotion, personal selling, direct marketing and public relations/ publicity as independent variables; prescription behavior as dependent variable; and brand image of prescribed drugs as mediator variable. However, physician's personal skills and level of competency, economic status, seniority and other demographic and macro factors are also not considered even though they have their own contributions on the subject under study.

Methodologically, medical doctors who are actively enrolled in private general hospitals and are privileged to prescribe will be the unit of measure. It will be conducted on medical doctors who are actively working for both selected public and private general hospitals in Addis Ababa. Other health care practitioners' perceptions such as health officers, nurses, optometrists, etc. who are authorized to issue prescriptions are excluded as they are not the intention of this study. On the other hand, physicians working at different organizations in regional states are also excluded due to time and financial constraints. Geographically, the study considers only the physicians practicing at selected hospitals in Addis Ababa.

1.6 Limitation

Limitation of the study may arise from the sampling methods as the sample will be taken from judgmentally and conveniently selected respondents in the selected hospitals. Such non-probabilistic sampling approach may induce sampling errors and fails to generalization of the study to other related subjects as well. On top of that one of the disadvantages of this study, which depended on the responses of the physician, is a tendency among respondents to give socially

desirable responses to questions relating to one's behavior. Disclosure of unethical prescription behavior may inhibit them to tell the actual truth on ground. This also affects the credibility of the major findings and respective conclusions.

1.7 Definitions of Terms

Physician: is a person who has earned a Doctor of Medicine (MD) degree and who is accepted as a practitioner of medicine under the laws of the state, province, and/or nation in which he/she practices.

Prescription Behavior: is any order for medicines written by a duly authorized healthcare professional issued to a patient in order to collect medicine from dispensing unit. Behavior is defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour.

Detailing: Detailing refers to the activity of pharmaceutical sales representatives (reps), when they make calls to physicians and provide them with "details" of approved scientific information, benefits, side effects, or adverse events, related to a drug.

Generic Medication: is a pharmaceutical drug that is equivalent to brand-name product in dosage, strength, route of administration, quality, performance, and intended use.

Medical Representative: is a representative of a manufacturing firm employed directly or through the distributor and licensed by the drug regulatory authority to conduct promotional activities in providing information to healthcare professionals about the firm's drugs

Over-the-Counter (OTC) drug: is a medicine or particular pack of medicine which is available without prescription and that can be advertised to the public for use in self-medication.

Prescription drug: is a medicine that is only dispensed under a prescription written by an authorized healthcare professional.

Promotion: is any activity undertaken (or material prepared) by a member company or any third party acting on behalf of the company which is directed at healthcare professionals to promote the prescription, recommendation, supply, administration or consumption of its pharmaceutical product(s) through all media, including the internet.

Promotional Item: is a non-monetary gift such as brochures, stationeries, clinical study reprints, detail aids, anatomical charts and others made for promotional purpose.

Promotional Aid: is a non-monetary gift such as sponsorship, meals, and others made for promotional purpose.

1.8 Organization of the Study

To give a clear and concise understanding to the reader this study is wrapped up as follows. Chapter one introduces the very essence of marketing communications (promotional mixes) and its background followed by problem statement extracted from the literature gap of the study area. The second chapter deals with the theoretical framework, empirical framework and the conceptual framework of the study and their respective justifications of the model to be applied for analysis. Chapter three is dedicated for the methodological part. It explains about the nature of the study, the sampling design and techniques applied; the sources of data collection and the means of analysis applied to execute the study. The fourth chapter deals with the analysis part of the study like the correlation and regression analysis with major findings and discussion as well as the testing of the hypothesis proposed in chapter one. Finally, the fifth chapter summarizes the whole journey by summarizing, concluding, recommending and giving some directions for future research.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

Pharmaceutical marketing is quite different from general marketing as the decision makers are the physicians (secondary customers) not the patients (original consumers), thus maximum marketing strategies are designed on focusing to the physicians. This study explores the influence of pharmaceutical marketing on the prescription practices of physicians in Ethiopia. In these regards, the review of the related literature is composed of pharmaceutical marketing communications and their respective based on theoretical and empirical studies along with design of conceptual frameworks (models) and hypotheses formulation. Finally, overview of Ethiopian pharmaceutical industry is discussed briefly.

2.1 Theoretical Review

2.1.1 Physician Prescription Behavior

Physician prescribing behavior is a very broad concept including various dimensions. In this research the focus will be on adoption. According to the American Marketing Association (2010) adoption can be explained as a process that individuals and firms, in this specific case, physicians, go through when accepting new products. The different stages in the process of adoption include; new product awareness, gathering information, developing positive attitudes towards the product, testing it in some direct or indirect way, finding satisfaction in the trial and adopting the product into a standing usage or repurchase pattern. The process of adoption often is also referred to as the process of diffusion, the process by which new ideas and products become accepted by a society. According to a study by Rogers (1995) this process is a social process which social contagion initiates adoption. That is, physician's decision to adopt a drug is influenced by their exposure to other physicians' attitude, knowledge, or behavior (Van den Bulte, 2001).

Leo and Kangis (2000) examine and presented how the medical doctors decide about their prescription pattern of different medicines. According to these authors, of particular interest is the assessment of the extent to which behaviour is entirely volitional and thus completely under the physician's control. This would determine the extent to which external stimuli, such as communications from the pharmaceutical industry and the media, have any influences or not. The analysis of the influence of different factors has found that prediction of intended prescription behavior increases significantly when behavioural control is added to the measurements of attitude

and subjective norm. In circumstances of high behavioural control, the theory of planned behaviour seems to collapse in favour of the theory of reasoned action (Leo and Kangis, 2000).

In another research Leo and Kangis (2002) presented a report on the evaluation of two models, of their ability to explain the influence of cost containment measures of governments and sick funds on the prescription behaviour of physicians. Real prescription behaviour was measured at pharmacy level. The comparison of the models carried out by the authors is significant for the pharmaceutical industry as decomposing the constructs of normative and behavioural beliefs helped generate additional information towards understanding each factor's influence on behavioural intention and behaviour. The decomposed composite attitude behaviour model proved more helpful, in this instance, than that based on the theory of planned behaviour (Leo and Kangis, 2002). Moreover, when modelling behaviour, it is necessary to evaluate cultural variables.

According to Schneider (2002) in today's international markets, problems typically arise if international corporations develop behavior strategies locally and then try to implement them globally. According to the author who has carried out the research, this is justified since advances in transportation and communication have homogenized the middle-class culture to an extent that cultural differences can be neglected in international management. Schneider (2002) state that the interpretation of the simulations suggests the elimination of unified behavior prescriptions in multinational corporations, at least as long they have not been tested for their affective meaning. According to the author, based on the simulations, it can be further speculated that managers who spoil their images by following official, but culturally inappropriate, behavioural guidelines are likely to counterbalance the negative effects with informal, culturally appropriate behavior.

Pharmaceutical strategies in the changing world have to become even more flexible and use various opportunities offered by the marketing mix. Therefore, Rollins (2010) analyses the recent trend in direct-to-consumer advertising has been the increasing presence of non-branded, or help-seeking, ads. In these ads there are not mentioned the products are branded, the only identity is the name of manufacturing firm is the identifier. The results of this research show that subjects who either viewed the non-branded ads or serious type of disease involvement had more positive behavioural intentions. It is significant that intent did not correlate to the predefined behavior. However, those with higher behavioural intentions performed the behavior significantly more. On the basis of the results of the research, it can be concluded that non-branded ads induced greater behavioural

intentions, which could lead to more physician discussions and increased information-seeking behavior (Rollins, 2010). In addition, according to Singh (2008) the suggested propositions highlight the importance for pharmaceutical companies to leverage resources, bring complementarily in promotional activities and capitalise on the positive word-of-mouth references of physicians to increase the effectiveness of their sales force in influencing physicians.

2.1.2 Pharmaceutical Marketing Communications

Pharmaceutical marketing differs from other types of marketing because the consumers (patients) are not the target audience. It is the physicians who make the decisions on behalf of the patients are the target audiences of the pharmaceutical companies. For this reason, the marketing strategies are mainly designed for the physicians not for the patients. In order to answer the question what is pharmaceutical marketing a clear definition of the concept is highly relevant. In this research the American definition of pharmaceutical marketing is relied on. According to the Prescription Drug Marketing Act (PDMA), a law of the United States federal government, "pharmaceutical marketing is the business of advertising or otherwise promoting the sale of pharmaceuticals or drugs" (U.S. Department of Health and Human Services, 2006).

One of the most widely used definitions of marketing communication (MC) was developed by Rossiter and Bellman (2005) who defined it as "marketer-originated messages, placed in various media, their purpose being to sell the brand by showing it, saying things about it, or both, in a manner that establishes the marketer's desired position for the brand in the minds of target customers. The above definition brings out the idea that messages sent by the marketer are controlled and developed by the marketer using various channels of communication.

Mass communication was at the heart of marketing communications from the Industrial Revolution through until the last quarter of the twentieth century (Egan, 2007). As Eganen lightened, mass communication was challenged because marketers become more interested in employing the one-to-one marketing as two major changes of direction are in effect. These changes were development of relational marketing and the advancement of technology that aided marketers to analyze and target individual consumers. This leads us to realize the importance of understanding the relationship between digital communication and traditional communication in the old media; for example, TV, radio, newspapers, magazines and billboard ads, the communication model was and is

one-to-many compared to the one-to-one or many-to-many communication model in digital media, like blogs, social networks, wikis and every form of viral marketing campaign (Frey, 2010).

The best consideration nowadays for a company-to-customer communication is the one-to-one or the one-to-many model (Hoffmann and Novak, 1996). These models speak of a monologue in the old media and a dialog in the new media, because of the inter activity of social-network and forum users. Resulting from this, the goal in traditional media was branding by convincing the customer of a strong brand. In contrast the digital media is about communication with the potential customer or user in a dialog to create interest by using a pull strategy. In addition, it can be said that it is a supply-side thinking communication in the old media compared to a demand side thinking in the digital media, where "customer pull becomes more important" (Chaffey, 2009). Besides this, in media communication, the customer is a target in comparison to the digital media communication where the customer is a partner, by answering surveys and product rankings" (Chaffey, 2009). It has to be noted as well that mass communication (one–to-many model) is not completely dead as many big companies are still effectively applying mass advertisement. Both types of communications have their own qualities and drawbacks and marketers employ them whenever they are appropriate.

2.1.3 Dimensions of Pharmaceutical Marketing Communications

According to Smith (1991) the main goal of pharmaceutical marketing is pharmaceutical care, care that is required for patients and consumers and declares safe and rational drug usage. This involves providing solutions for diseases and sickness in order to improve overall health and public's knowledge of health (Sheehan, 2007).Moreover, marketing practices are also aimed at increasing sales and profits for manufacturers and wholesalers (Rubin, 2004). Via marketing efforts directed at consumers, the pharmaceutical industry aims at expanding the market and influencing market share (Balaand Bhardwaj, 2010).

Other key goals of marketing are the exchange of information, and matching as closely as possible the marketing mix of their companies to the needs of their costumers/patients (Smith, 1991). The exchange function of pharmaceutical marketing entails the exchange of information, products, use right and payment at every stage of the supply chain as well as upwards (towards the manufacturer/wholesaler) as downwards (towards the customer) (Smith, 1991). The exchange of information is part of a larger goal of pharmaceutical marketing, communication.

Through marketing efforts, it becomes possible for pharmaceutical drug manufacturers and drug wholesalers to communicate new developments in pharmaceuticals and drugs, and to promote their products to physicians and consumers or patients. The content of the information notifies physicians and consumers about the efficacy and the characteristics of a drug, which eliminates any uncertainty and initiates the process of diffusion and early adoption of the new drug (Honka, 2005). With promotion through advertising one can increase brand awareness (Yoo, 2000), this way drug manufacturers can be competitive with other pharmaceutical suppliers in the pharmaceutical industry. The promotional mix, in theses regards consists of five diverse fields of communication channel: advertising, personal selling, publicity, direct marketing and Sales promotion.

2.1.3.1 Advertising

Advertising is a one way, non-personal and planned paid promotion or message aimed at influencing the attitude and behavior of a broad audience about a product or a service (Frey &Rudloff, 2010). It is the tool within the marketing communications mix with the largest reach. It includes all types of media like television, radio, print, online advertising and any kind of ad which is meant to stimulate visual or verbal senses of the target audience. It has almost no geographical boundaries and therefore reaches the largest number of customers while generating the lowest per-head costs in the MC. But also, other sources of advertising in public places like billboards, public transportation vehicles or even restrooms are used as advertising space. Even the most unlikely places are used as a space for placing ads in order to make the customers aware of the brand, company, or a certain product. However, since it is a one-to-many type of communication, biased and low in credibility, consumers have lost trust in it. According to Mangold (2009), consumers have become more educated and want to control messages they receive. This has led to the current shaking up of the advertising industry.

Advertisement in the pharmaceutical marketing context is a paid non-personal promotion of ideas, goods and service by identified sponsors. It includes promotion of drugs in non-personal way through literatures, magazines or banner in conferences. Catch cover of free samples and words on the packaging of gift items are also included under advertisements.

2.1.3.2 Personal Selling

Personal selling is a form of person-to-person communication in which a seller attempts to assist and/or persuade prospective buyers to purchase the company’s product or service or to act on an

idea. Unlike advertising, personal selling involves direct contact between buyer and seller, either face-to-face or through some form of telecommunications such as telephone sales (Sagar, 2012). Personal Selling differ from most other forms of promotional mix because the message moves directly from the marketer to an individual member of the target audience, providing an opportunity for interaction and modification of the basic message to address specific target audience concerns.

Personal selling provides extraordinarily good support in order to inform customers about new products/ services as well as a close connection between the company represented by the company representative and the customer (Basara, 1994; Obaidat and Al Ghadeer, 2011). On the other hand, personal selling is the most expensive segment of the MCs mix and the most formidable form of marketing communication (Mangold, 2009). Being able, as a company to sell personally to customers and improve the relationship between the company and the customers will generate a large benefit for the company regarding the customer relationship management. The reason for business to perform is to satisfy the needs of customers and therefore each company has to evaluate the future needs and desires of its target customers.

The best solution for evaluating the needs is via personal contact with the customers, because through performing like this, companies get the necessary information from the source, which actually creates the demand. Within personal selling there is one top priority, which should be the attitude for each company performing this kind of marketing communication (Sagar and Kalaskar, 2012). This attitude is “the customer comes first”. This means the company is adapting its products/services according to the demand created byte customer and does not try to create demand for the customer by selling them products the company thinks the market demands.

2.1.3.3 Publicity/Public Relations

Public Relations is a proactive and reactive management function used to evaluate public attitudes, identify the policies and procedures of an individual or organization with the intention of executing a program of action to earn public understanding and acceptance (Johnston, 2009).PR is an essential part of the marketing communication and has high importance in bigger organizations than small companies (Frey, 2010). Kunczik (2002) indicated that companies can communicate PR via different channels, like sponsorship, interviews, charitable events, financial reports to shareholders, factory tours or lobbying just to mention a few. PR will help companies get closer to their customer by providing additional info and revealing more information than the company actually has to.

In pharmaceutical marketing in includes various program designs to promote the brands. It involves product launch meeting, clinical or scientific meetings, conducting a discussion by a specialist doctor related to products, sponsoring physician for conferences etc. It helps an organization and its publics adapt mutually to each other and broadly apply to organizations as a collective group, not just a business; and publics encompass the variety of different stakeholders.

2.1.3.4 Sales Promotion

Sales promotion refers to marketing and communication activities that change the price/value relationship of a product or service perceived by the target, thereby generating immediate sales and alters long term value (Schultz, Robinson and Petrison, 1998). To initiate instant sales or specific purchase, sales force and consumers are given incentives that result in tangible and non-tangible benefits (Percy, 2008; Mullin and Cummins, 2008). However, Schultz, (1998) posit that one disadvantage of sales promotion is that it does not change the opinion of the buyer about the product but rather initiates immediate or short-term results. Marketers however misuse sales promotion in Social Media through posting promotions and not engaging with customers.

Sales promotion is one of the simpler tools within the MC Mix and is inessential part of the marketing communication for all types of companies. The objective of sales promotion is to deliver an incentive for the customer to buy the product. This incentive is normally delivered by providing free goods, gifts, discounts, coupons or samples (Schultz, Robinson and Petrison , 1998). Everything that adds additional value to the actually purchased products is seen by the customer as a benefit and therefore appreciated by the customer. Customers have shown that they are willing to pay a premium for real value and service, which can easily be influenced by sales promotion.

Sales promotion in pharmaceutical promotions is considered as any initiative undertaken by an organization to promote an increase in sales, usage or trial of a product or service. Sales promotions are varied. Often, they are original and creative, and hence a comprehensive list of all available techniques is virtually impossible. In pharmaceutical marketing these includes brand reminders like pens, paper weights, writing pads etc. Gifts of various value are also included in this category.

2.1.3.5 Direct Marketing

Direct marketing is a management concept, a multi-level communication and distribution tool (Hesse, 2007). It is accountable, interactive and used tonsure direct response from customers (Percy, 2008). A Direct Marketing campaign accesses huge recorded database to build profiles of

potential customers and provide valuable marketing information for effective direct targeting. It involves activities like direct mail, telemarketing, database management, direct response ads through the direct mail, the internet and various broadcast and print media (Belch, 2003, Hesse, 2007). Direct Marketing is divided into two elements, namely building a quality database over a long period and cost monitoring and controlling. The controlling elements indicate that there is much control given to the marketer as opposed to Social Media which puts control in the hands of the consumers. Scholars suggest that the main aim of direct marketing is to stimulate the targeted audience to take a now action, and create an individualized customer relationship (Hesse, 2007).

The difference between direct marketing and advertising is that the company reaches out for their target customers without any intermediary channels as they are used and required in advertising in order to get into contact with customers. The different components of promotional tools used in direct marketing can be split up into direct mailing, catalogues, inserts and coupons, online marketing as well as telemarketing (Tarasi, 2013). If performed correctly direct marketing is seen as one of the most effective marketing communication tools, because the company creates in the long run valuable relationships with its customers, who are always well informed about changes or additional products/services in the portfolio of the company.

The objective of direct marketing is to support the customer in a purchase decision by making them aware of new products or just to remind them about a demand, which is not yet distinct (Yuan, Wu, 2008). On the other hand, there is also a negative side to direct marketing as marketing communication tool. It is an unsolicited advertisement, which is nowadays often seen as annoying by the general public. The same holds for telemarketing and direct marketing via e-mail, which is seen as spam or an invasion of privacy and often has the contrary effect for the company. Therefore, companies should handle the direct marketing tools with caution in order not to upset their customers and weaken the relationship between the company and the customers (Mullin, 2002).

Direct marketing is a type of advertising campaign that seeks to elicit an action from a selected group of consumers in response to a communication from the marketer.

The communication itself maybe in any of a variety of formats including postal mail, telemarketing, and direct e-mail marketing and point-of-sale interactions . In pharmaceutical marketing it involves sending information of the brand advertisements via post, telephone, email or others.

Egan (2007) alleged that the promotional marketing mix is now considered to be six as interactive media is becoming one of the major promotional-mix elements that modern day marketers use to communicate with their target markets. Interactive/Internet marketing is becoming imminent as technology advances in the communication technology and it led to the growth of interactive media particularly internet. Interactive media allow for a back-and-forth flow of information whereby users can participate inland modify the form and content of the info they receive in real time.

The Interactive media allowed users to perform a variety of functions such as receive and alter information and images, make inquiries, respond to questions, and, of course, make purchases. Internet has changed not only the ways companies design and implement their entire business and marketing strategies; it is also affecting their marketing communications programs (Datta and Dave, 2017). Companies develop their own websites to promote their products and services. Moreover, because of its interactive nature, Internet is a very effective way of communicating with customers.

Many companies recognize the advantages of communicating via the Internet as it will allow direct interaction with customers. Sales promotion is any initiative undertaken by an organization to promote an increase in sales, usage or trial of a product or service (Aaker, 1993). Sales promotions are varied. Often, they are original and creative, and hence a comprehensive list of all available techniques is virtually impossible. In pharmaceutical marketing these includes brand reminders like pens, paper weights, writing pads etc. Gifts of various values are also included in this category.

2.1.4 Brand Image

Brand image is the core of service or product. In the business market brand image can also be expected to play an important role, especially in situations where it is difficult to differentiate quality-based products or services that are real (Shankar, Azar & Fuller 2008). Brand images are usually communicated to customers that make them believe their products are of a certain level and make them decide to buy (Torres & Bijmolt, 2009). Marketers usually assume that the brand image is the basis on which the customer evaluates the quality of the product or service, namely the physical guess about the product. The understanding is that customers will use brand image to take a conclusion about a product, or to maintain awareness of the product quality (Bibby 2011).

Also, brand image could be seen as a set of relative localization, standard identical quality guarantee and functional attribute of the product or service which resulted in customers view their own self image and assist them in making their purchase decision. Furthermore, in literature there is

a mention that products with strong brand image can reduce cognitive risk and increase the value of product or services for customers (Kwon and Lennon, 2009). In these instance customers often use brand image to make conclusion about the quality of the product or services and influence customer's behavior (Salinas and Pérez, 2009). Thus, quality of the brand image indirectly makes customers recognize the quality of the product or services. Ideal use of brand image not only helps companies to have position in the market, but also to defend the brand from competitors (Cretu & Brodie, 2007). That is why companies these days work very hard to maintain brand image and invest effort and money into develop a good image. Because the importance of brand image is well known, it is no wonder that brand image is considered to be prime topic in marketing (Torres & Bijmolt, 2009).

2.1.5 Physician Prescription Behavior

Leo and Kangis (2000) examine and presented how the medical doctors decide about their prescription pattern of different medicines. According to these authors, of particular interest is the assessment of the extent to which behavior is entirely volitional and thus completely under the physician's control. This would determine the extent to which external stimuli, such as communications from the pharmaceutical industry and the media, have any influences or not. The analysis of the influence of different factors has found that prediction of intended prescription behavior increases significantly when behavioural control is added to the measurements of attitude and subjective norm. In circumstances of high behavioural control, the theory of planned behavior seems to collapse in favour of the theory of reasoned action.

Taneja Girish (2008) concluded that private sector doctors attached more importance to personal selling, sponsorships and educational promotional tools while scientific promotional tools were considered more important by higher qualification doctors. It is also identified that promotional policy that emphasized relationship with opinion leaders and personal selling were labelled as successful marketing efforts (Stros, 2009). Henry David (2012) discussed the relationship between doctors and drug companies that lead to inappropriate prescribing which harm patients; create conflict of interest and conflict of communication thereby diminishing professional standing of doctors in the eyes of the patients. These relationships lead to use of unnecessary and expensive medications thereby affecting the overall health cost of the nation (Henry David, 2012).

2.1.6 Pharmaceutical Promotions and Physician Prescription Behavior

The influence of promotional tools by pharmaceutical industry on prescribing behaviors of doctors has a greater impact. The general promotional tools like gifts and etc. These are more influential rather than scientific promotional tools for the physicians' contrast with consultants (Boltri, 2002). The effectiveness of free dug samples and gifts and other promotional tools on physicians' attitude and prescribing behavior considering as most appropriate and least unethical in the study by (Morgan, 2006) and these free samples have led the doctors dispense and subsequently prescribe drugs even the times when those drugs are not their preferred drug choice (Warrier , 2010).

Clark and his colleges (1998) analyzed the effect of drug sample availability on physician prescribing behavior. Based on their review, they investigate that most accepted view that the medicines free samples are beneficial to the patients and indirectly the good caring response come from the doctors from the free samples that's why it should be reconsidered (Clark, 1998). Corckburn and Pit (1997) examined the prescription behavior among Medicare beneficiaries with capped prescription benefits. They find that the prescription behavior has significant impact on the Medicare choices members.

The ethical activities from the medicine companies to the medical professionals are through communications by medical sales representatives. Small gifts such as pens, notepads, dinners sponsored by pharmaceutical companies, sponsorship to the conferences and many other activities under taken by physicians. Many doctors do not take into account accept small gifts as unethical and inputs such Rx affect its structure. A doctor agrees that such activities by the pharmaceutical companies are the indirect requirement of their drug prescriptions (Corckburn, 2000)

A research conducted in Bangladesh found that sales personnel activity, personal relation, product quality and reputation of the company influence the prescription behavior of a physician (Mir Monir Hossain et al., 2013). A research conducted in Pakistan has found the new drug, promotional tools and drug samples significantly affect the prescription behavior of physicians and remaining factors do not leave any major effect. Branded products are always expensive than local products therefore the brand prescription is less affective on prescription behavior of physician because of the cost factor (Saad, 2014).However, an undeniable fact is that marketing efforts do have a significant impact on physicians' decision to adopt and can initiate the process of diffusion. This refers the

informative and persuasive effects and elaborates on the effects of Direct to Physician (DTP) and Direct to Consumer marketing (DTC).

2.1.6.1 Informative and Persuasive Effects

In the early stages of the product life cycle marketing functions more as an informative instrument, later this function becomes more persuasive. The informative effect implies that marketing serves as a communication channel, which educates physicians and exposes consumers to information that may improve their health outcomes and medical options. (Rubin, 2003). The persuasive effect eventually will lead to overuse, misuse and wrong prescription of drugs (Chetley, 1995). It will put extra pressure on physicians to prescribe onerous expensive drugs even when a cheaper generic drug would be appropriate (Mot, 2005). These findings are in accordance with the findings in former research by Caves& Hurwitz (1988) and Rizzo (1999).

2.1.6.2 The Effects of Direct-to-Physician Marketing

Physician prescription behavior is affected by pharmaceutical marketing in a significant, positive way. Marketing efforts create awareness among physicians about new drugs and their specifics (Carter, 2001). Due to the promotional activities directed at physicians, physicians learn and experience the effectiveness of the new drugs more rapidly when exposed to marketing communication.

Pharmaceutical marketing can have direct effects and indirect effects. Direct effects, also called reminder effects, are effects that directly influence physician adoption of drugs, here goodwill, achieved by constant interaction between pharmaceutical representatives and physicians, influences the preferences for certain drugs and products. The direct effects positively influence physicians' probability to prescribe (Honka, 2005). Indirect effects can be explained as effects that indirectly affect physician adoption. Important is the perceived product quality, marketing communication makes it possible for consumers to change attitudes and reduce uncertainty about the exact quality of a new drug through a process of learning (Narayanan, 2005).

Another important influence that directs to physician marketing practices on the adoption of new drugs is social contagion. That is, physicians are influenced by exposure to other physicians' attitudes, knowledge, or behavior when deciding to adopt a drug (Van, 2001). When a physician makes a decision to adopt, he/she influences other physicians near him/hers (Berndt, 2003).

A study by Wieringa (2010) suggests that marketing effects are largest in size in the period right after the introduction of a brand or a new drug and that the marketing efforts directed at physicians become less effective at a later stage in the product life cycle. This can be explained by the fact that most information is dispersed in the early stages in the product life cycle of a new drug. In addition, a study by Srinivasan (2001)suggests that up to a certain point marketing communication directed at physicians positively affects the prescription probability of a drug, when passing that point excessive marketing efforts generate adverse effects.

2.1.6.3 The Effect of Direct-to-Consumer Marketing

With Direct-to-consumer advertising patients are provided with information about a (new) drug. Pharmaceutical companies try to persuade consumers/patients to discuss their specific brand when visiting their doctor, which indirectly makes physicians aware of the new brand. Studies suggest that physicians' probability of adopting a drug is significantly affected by patient requests. For instance, a study by Posavac (2004), shows that a physician's probability to prescribe or adopt a drug increases when a patient is positively influenced by DTCA , as the patient is likely to search for more information about the drug. However, a physicians' reason not to describe a requested drug is also relevant in this context. For example, when a physicians' belief is that the drug is not right for the patient and another drug is more appropriate or when a less expensive drug is available on the market that has the same specifics.

Despite of positive effects of Direct-to-consumer advertising, negative effects are as well relevant when assessing the effect on adoption and diffusion of drugs. Patient's drug requests can put pressure on physicians, which can lead to the adoption and prescription of a drug, even though when the physician beliefs the drug is less appropriate and that there may be a comparable drug available that is less expensive. This will lead to overuse, misuse and wrong prescription of drugs through a persuasive effect. A survey conducted by the American Association of Pharmaceutical Scientists (Pirisi, 1999) reported that 91% of the physicians felt pressure for complying with patient requests, only 9% felt no pressure, 6% felt a lot of pressure and, the remaining 85% felt some or little pressure.

In summary of the above classification, the pharmaceutical marketing influences greatly the prescription behaviors of physicians and they are more keen prescribing the drug with relate to detailing skills, sampling of the products, scientific materials, relationship with the doctor,

continuous meeting and CME meeting conducted as a promotional tool by the pharmaceutical companies. Effectiveness of different method such as frequency of visit, quality of products, skilful details of product and gifs, varies widely physicians to physicians and sales personnel to sales personnel. Some of the major factors are summarized as below.

Frequency of visit to the physicians by the sales personnel and personal relationship of the physician with the medical representatives are mostly influence the prescription behavior of the physicians. It's a quiet simple equation. In Ethiopia, there are more than 125 pharmaceutical companies with more than 10000 brands (FMHACA, 2017). For example, calcium, generic has been than 15 brand names. Which one will a doctor write for his/her patient? Answer is simple, the brand which is more visited to the physicians. That's why frequency of visit and personnel relation is most important than others.

A physician always prefers the quality of the product for his patient. That's why quality of the product is so much important. A product with less or no quality not suitable for long run, with quality product sales personnel also gets extra confident to detail the brand in front of the physicians. Same thing to the physicians also, because they can write it freely.

Skilful detail of a product is necessary to promote a drug, especially for the newer molecule. New drug molecules are not really familiar to the physicians. A perfect detailing of that drug can create the opportunity to make a space into physician's prescription. Beside this new information of existing product can be more accepted by a skilful detailing.

Gift with high values is always appreciated by the physicians. Sales personnel are always tried to find out the hidden need of a physicians. If they find it and solve it with proper item, then it will be a perfect gift to them and this may contribute in the prescription a lot. In medical institutes in Bangladesh, conference occurs in very frequent basis. Sponsoring this event are also an excellent way to get into the good list of a physicians. That's why it is considered as somehow effective to make good relation to physician's and this also reflects into the prescription.

2.1.7 Linking Promotional Mix and Brand Image

Brand is the most valuable asset for any company and has been widely acknowledged as an essential reason for consumer choice and serves as a tool for consumers to check the differentiation of the products and their uniqueness whereby it enriches consumer trust and confidence in facilitating their decision-making process which alleviate some of the problems associated with

their experience and credence qualities (Chung, 2013; Kremer & Viot, 2012). Research by Keller (2009) and Bian & Moutinho (2011) has supported that brand image is an important element of brand equity which refers to the consumer's general perception and feeling about a brand which could be built through different marketing strategies like promotion in particular.

Promotion is related and begins with a base of creating awareness and strengthening a company's position or image. It is promotion campaign that makes the companies known. The second role is to create favourable climate for salespeople. In some instances, customers will order directly from the advertising, so the final purpose of advertising is to generate sales. Promotion creates brand awareness, help position brands, and build brand images. Consumers ascribe high quality to esteemed brands (Rubio, 2014). Brand image that is familiar to the consumer can help the companies to host new brands and improve the sales of current brands. In this regard, integrated marketing communications and word of mouth strongly influence brand image (Saura, 2012).

According to Jones & Kim (2011) states that marketing promotion is when ideas or images of products or services marketed have been identified and recognized by many consumers. Brand communication is not only for building brand recognition, but also building a good reputation and a set of standards that must be surpassed by companies (Sahin, 2011). Marketers need to communicate about other customers' experiences with brands, for example customer satisfaction using a brand and how it brings joy and comfort that makes customers wants to buy the brand again. All of this will build a brand image in the customer's mind. So, this can be said that the more brand communication increases, the higher the expectations of the brand image that customers conceptualize.

2.2 Empirical Review

Related studies conducted on the effect of promotional mix strategies on the prescription behavior of physician have been briefly stated as below.

The effect of advertising

The effect of advertising in the prescription drug market may be especially prolonged due to the fact that selling a prescription drug is a multi-stage process, with time lags between advertising exposure, scheduling a physician visit, and obtaining and filling the prescription. Wosińska (2002) shows the importance of the drug formulary in driving DTCA effects (with advertising having a greater effect on demand for drugs that have a preferential position on the insurer's formulary list),

and notes that the inability to differentiate across the formulary status may also explain why Rosenthal (2003) do not find a market share effect of DTCA.

The specifications in Rosenthal (2003) include class fixed effects, but do not control for unobserved heterogeneity across drugs within a class through drug-specific fixed effects. The study uses time to patent expiration, an indicator variable for 1997 (reflecting the FDA's change in policy), and interpolated monthly values of television advertising costs per minute as IVs that can plausibly be excluded from the sales equation. Similar to Rosenthal (2003), they use drug-class fixed effects, and so their effect is identified from within-class variation in DTCA over time. They also use an IV procedure, employing the same drug company's DTCA expenditures in other unrelated drug classes as an instrument for DTCA in a particular drug class. Consistent with a market-expansion effect, they find that a higher stock of DTCA spending (which includes current advertising and a depreciated sum of past advertising) is associated with an increased number of physician visits, especially post-1997. Each $28 increase in DTCA leads to an additional physician visit within a year where an Rx (intake) drug from the class is prescribed.

Liu and Gupta (2011) use monthly-level patient visit data, relating to high cholesterol diagnoses and drug requests, spanning June 2002 through April 2004. They match local and national-level DTCA expenditures on statins, and estimate IV-based specifications with market-level fixed effects. Their results indicate that DTCA positively impacts the number of visits to physicians by newly-diagnosed patients, and that the effect is larger on drug visits than non-drug visits. Television DTCA has strong effects on underserved populations, such as individuals on Medicaid. Bradford et al. (2006a) further confirm this market expansion effect for DTC advertising of osteoarthritis drugs. Specifically, they analyze monthly clinical information on primary care practices between 2000-2002, merged with brand-specific DTCA on local and network television. Their results also show that adertising for Vioxx and Celebrex increased the flow of osteoarthritis patients into physician practices.

Yet another aspect of direct drug promotion adds to the complexity of the isstie. Prior research (Mitra and Lynch 1995) has attempted to reconcile the opposite effects of reminder advertising (which broadens the size ofthe consideration set and thus increases price sensitivity) and differentiating advertising (which strengthens the preference for a brand and thus decreases price sensitivity). We believe that detailing and samples can induce both reminder and differentiating

effects, which makes Mitra and Lynch's (1995) work relevant for their study. They find that for product markets in which consumers must rely on memory to generate alternatives, increased advertising of brands may increase price sensitivity. Conversely, in the case of point-of-purchase information, the net effect of advertising is to decrease price sensitivity. Although it is clear that physicians retrieve drug alternatives from memory before writing a prescription (rather than check the contents of their medicine cabinet), free samples left by drug representatives after the detailing session might act as long-term reminders of the existence of the drug and dampen the increased price sensitivity effect

Several studies on advertising have suggested that when used as a persuasive tool, advertising affects the consumer by focusing on the differentiating features and attributes of the product and thus reduces price sensitivity. In contrast, advertising that provides information about the existence and availability of competitive products broadens the consideration set and thus increases price sensitivity (see, e.g., Mitra and Lynch 1995; Nelson 1970, 1974; Nerlove and Arrow 1962). Based on this notion, the proposed hypothesis will be:

H1–Advertising has significant effect on physician prescription behavior.

The effect of Sales Promotion

Shamimulhaq (2014) examined factors influencing the prescription behavior of physicians and concluded that the way sales person promotes their brands by using different promotional tools is the most influential than any others. Sales promotion is any initiative undertaken by an organization to promote an increase in sales, usage or trial of a product or service. Sales promotions are varied. Often, they are original and creative, and hence a comprehensive list of all available techniques is virtually impossible. In pharmaceutical marketing these includes brand reminders like pens, paper weights, writing pads etc. Gifts of various values are also included in this category.

The marketing to health care providers takes four main forms: gifting, detailing, drug samples and sponsoring continuing medical education (CME) (Sufrin, 2008). The research has concluded that pharmaceutical sales forces as well as promotional tools are important indicators of corporate identity to doctors (Prosser, 2003). Beside provision of information, many other promotional tools are being used to change the prescribing patterns of customer (Peters, 2009). Scientific symposia offered in hotels at the expense of pharmaceutical manufacturers' (Orlowski and Wateska, 1992), or industry sponsored CME courses (Bowman and Pearle, 1988) increase the number of prescriptions

for the advertised medications. The close contacts with the pharmaceutical industry increase the likelihood that doctors will plead for including the drugs from those manufacturers in hospital drug formularies (Chren and Landefeld, 1994).

Recent studies had also shown that short seminars that focus on the subject of interactions with pharmaceutical companies have not resulted inlasting changes in behavior or attitudes (Randall and Rosenbaum, 2005; Van, 2006). A study had also showed that small gifts to medical students increased positive attitudes regarding the advertised substances at a later stage (Grande, 2009). Another study showed that doctors whose prescription costs were high were more likely to receive visits from sales representatives and did so more often (Watkins, 2003). Sales representatives in the pharmaceutical industry (detailers) offer information on generic and current modes of therapy, the appropriate drug usage, indications, contraindications, and side effects. In addition to information about drug usage and positioning, detailers give retail price information and dispense free samples. Based on this notion, the proposed hypothesis will be:

H2–Sales promotion has significant effect on physician prescription behavior.

The effect of direct marketing

Physicians are expected to benefit from spending time with sales representatives, because the information they receive ultimately leads to higher patient recovery rates that speak well of the physicians' competence and expertise. Although it is clear that physicians retrieve drug alternatives from memory before writing a prescription (rather than check the contents of their medicine cabinet), free samples left by drug representatives after the detailing session might act as long-term reminders of the existence of the drug and dampen the increased price sensitivity effect (Gonul, 2001). To show the impact of promotion on the impact of prescription drugs studies were conducted and proved that promotion of competitive drugs adversely affects the physicians' prescription behavior and have a negative impact on less promoted products (Pedan and Wu, 2011).

Similarly, another study also showed that the interaction of medical representatives has an influence on prescribing behavior of promoted drugs (Wang and Adelman, 2009, Zipkin and Steinman, 2005). In general, different research findings suggested that drugs promotion has a positive impact on physicians' prescription behavior. However, studies recommend that to optimize their return-on-investment pharmaceutical companies should use an efficient allocation of resource (Pedan, 2011).

Some researchers also studied that Physician's personal attributes, cost of the medicine, and pharmaceutical industries' marketing and promotion strategies were mostly mentioned to influence prescribing decision. The identified factors showed prescribing is not only geared for patient benefit, but also towards physician's interest through different channels (Majid, 2018).

Direct marketing is a type of advertising campaign that seeks to elicit an action from a selected group of consumers in response to a communication from the marketer. The communication may be in varieties of format including postal mail, telemarketing, direct e-mail marketing and point-of-sale interactions. In pharmaceutical marketing it involves sending information of the brand advertisements via post, telephone, email or others. Based on this, the proposed hypothesis will be:

H3–Direct Marketing has significant effect on physician prescription behavior.

The effect of personal selling

In a rare qualitative study by Jones (2001) indicates that perceptions of the factors influence the decisions to start prescribing new drugs, including attitudes to drug information sources. Commercial sources of information, in particular pharmaceutical representatives, were an important information source for both consultants and GPs. Taneja (2008) revealed that perceived personal selling to be the most important factor with the highest explained by using a self-administered variance of 14.636 %. On the contrary other research found that drug representatives did not affect the prescription behavior of physicians while text books are the most frequent sources of information in prescribing decisions of physicians (Al Zahrani, 2014). Michael (2014) found that there is no significant among physicians who directly trust the information from drug companies and MRs from those who don't trust unless check the data by themselves using suitable reference books or journals.

There is a natural similarity between advertising in general and detailing and samples in the prescription drug industry. Because physicians receive visits from the representatives of competing pharmaceutical companies, it is expected that the persuasive aspect of the sales presentations will be mitigated by physicians' increased awareness of competitors' promotional strategies. In other words, it is believed that the persuasiveness of detailing and sampling activity will be cancelled out across the visits of different sales representatives, making the increased awareness of drug features and availability the only remaining effect to influence (increase) physicians' sensitivity.

The emergence of managed care has reduced the impact of detailers; however, they are still a strong source of information in the promotion of drugs (Ziegler, Lew, and Singer 1995). There is an unresolved debate whether detailing is a warranted or a redundant promotional activity. The federal government and consumer advocates often criticize pharmaceutical firms for what they consider excessive and wasteful expenditure in detailing and promotion. Based on this notion, the proposed hypothesis will be:

H4–Personal selling has significant effect on physician prescription behavior.

The effect of publicity

Publicity is used for long-term strategic image building, developing creditability and raising the physicians the organization's profile, to enhance other marketing activities. It is a planned element of the wider promotional mix, working in synergy with the others. Khajuria (2013), evaluate the impact of these pharmaceutical promotional strategies on prescribing of drugs by physicians. The results revealed that publicity like seminars, publications, and reputation of company and advertising like brochures and booklets were the most factors considered by the physicians.

Public relations help an organization and its publics adapt mutually to each other. Public Relations broadly applies to organizations as a collective group, not just a business; and publics encompass the variety of different stakeholders. In pharmaceutical marketing in includes various program designs to promote the brands. It involves product launch meeting, clinical or scientific meetings, conducting a discussion by a specialist doctor related to products, sponsoring physician for conferences etc. Thus, based on this notion, the proposed hypothesis will be:

H5–Publicity has significant effect on physician prescription behavior.

The effect of promotional mix on brand image

A research conducted in Pakistan has found the new drug, promotional tools and drug samples significantly affect the prescription behavior of physicians towards a branded drug (Ahmed, 2015). Branded products are always expensive than local products therefore the brand prescription is less affective on prescription behavior of physician because of the cost factor but through promotion, drug suppliers build the brand image of the product.

According to Ibrahim (2015) from a total of 110 physicians found that more than half of the participants (56.6%) agreed or strongly agreed that frequent visits from pharmaceutical sales

representatives were an important factor in physicians' drug brand selection. In a study Hassain (2013) which investigate on prescription practices of physician in Bangladeshi indicates that the perk of pharmaceutical companies now a days have a strong impact on physicians that nearly two thirds of the practitioners (66%) liked to write brand name of drugs on prescription due to their aggressive promotion.

Leo & Kangis (2000) examine and presented how the medical doctors decide about their prescription pattern of different branded medicines. According to these authors, of particular interest is the assessment of the extent to which pharmaceutical promotion is entirely volitional and thus completely under the physician's control to choose a brand. This would determine the extent to which external stimuli, such as promotion from the pharmaceutical industry and the media, have any influences or not to create brand awareness.

Montaner&pina,2008) concluded non-monetary promotions modify the expected regular price of the product and increase brand image of the promoted brand. Palazon & Delgado (2005) show that promotions have more positive effects on brand knowledge than monetary promotions.

The mediating role of brand image

The image of the producing pharmaceutical company is another important factor in terms of priority in what regards the intention of physicians to prescribe a certain product (Ion, 2013). According to Narendran (2013). Pharmaceutical marketing influences the choice of brandsby a physician. Studies have revealed that registration of brand names is a persistent problem and drug names are often difficult to spell, pronounce and remember (Castillo and Hopkins, 2003). Licensing of drugs, for prescribing, needs to demonstrate quality, safety and efficacy (Jureidini and Mansfield, 2001). 'Corporate image' has a significant but indirect impact on customer loyalty and loyalty is driven both by disconfirmation of expectations and the corporate image (Barnard, 2000).

Richarme (2001) argues that consumers form a subset of brands to which they apply decision making strategies. Since the brand image of the company and the brand image of a product also plays a vital role for changing or altering the prescription behavior for a doctor. Therefore, brand image of a company/product also a meaningful mediator amongst the defined variables, which are essential or they are the triggering factors for prescription behavior and the doctor's prescription habit or behavior, this concept also necessitates following interdependent.

In a study Hassain (2013) which investigate on prescription practices of physician in Bangladeshi indicates that the perk of pharmaceutical companies now a days have a strong impact on physicians that nearly two thirds of the practitioners (66%) liked to write brand name of drugs on prescription. Based on this notion, the proposed hypothesis will be:

H6 - Brand image has a mediating role on the relationship between promotional mix tools and physician prescription behavior.

2.3 Conceptual Framework

The theoretical review shows that marketing promotion and physician prescribing behavior has significant relationship. The key role of these promotional mix techniques is to increase the number of prescriptions made through provision of detailed information and adopt different promotional channels to persuade physicians. Available evidences from empirical studies in different industries' context also confirmed that that marketing strategies have impact on physician prescribing behavior either in the short- or long-term. Besides, branded generic drugs suppliers exert aggressive promotional efforts to position their brands in the minds of physician. The overall consensus is that marketing promotional efforts frequently have a positive effect on physician prescription behavior. Based on these notions, in this study, promotional mix tools namely advertising, sales promotion, direct marketing, personal selling and public relations/ publicity have direct relationship with prescription behavior of a physician. On top of that, the influence of brand image of prescription drugs in mediating their relationships is also the area will be investigated in Ethiopian private general hospitals' context. The model is adopted from Raheem, Jolita, Dalia & Muhammad (2016).

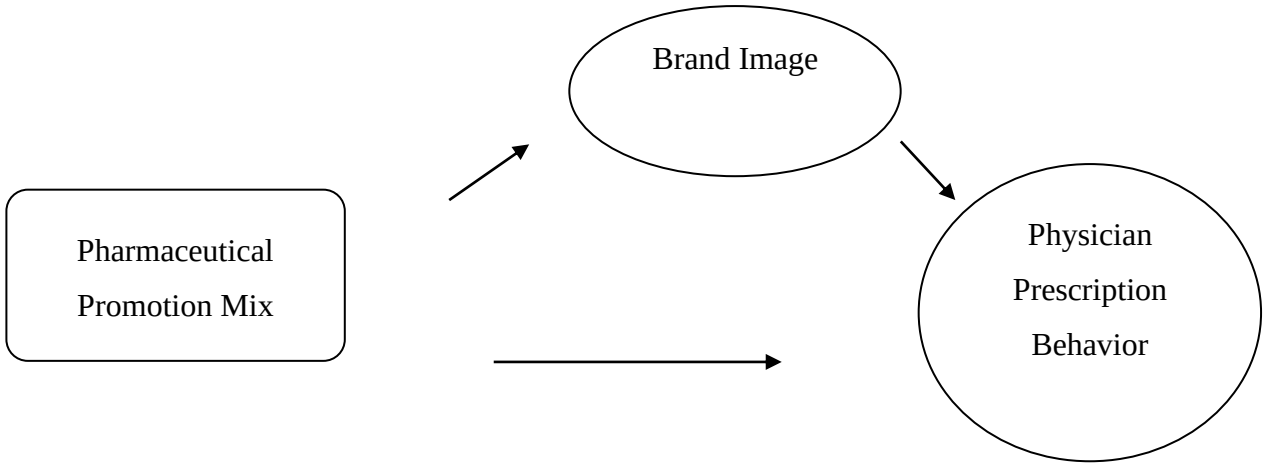

Figure 2.2 Conceptual Framework (Source: Raheem, Jolita, Dalia & Muhammad, 2016)

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter concentrates on the scope of methodological procedures employed in this study. It includes research design, sample design procedures, data collection instruments, data collection procedures, data analysis techniques, reliability and validity test of date collection instrument and ethical considerations.

3.1 Research Approach

There is a tendency to divide research into qualitative and quantitative based on type of data utilized as the criterion for classification. Qualitative research involves studies that do not attempt to quantify their results through statistical summary or analysis. The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses pertaining to natural phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection b/n empirical observation and mathematical expression of an attribute (Abbey, 2009).

Quantitative approach will be adopted in this study to get insight to the nuances of the process for best selection of methodology best fitted to the stages undertaken. In light of the explanatory research undertaken, descriptive and inferential analysis will be used. The former is all about describing the targeted respondents' demographic characteristics and their perceptions towards pharmaceutical promotion tools, prescription drug brand image and physician prescription behavior. While the latter is used to analyze the relationship of independent variables (promotional mix) with dependent variable (physician prescription behavior) along with the mediating role of brand image.

3.2 Research Design

In order to address the research gap identified and meet the specific objectives, descriptive and explanatory research design will be employed. The former is concerned with describing the characteristics of a particular individual, group or events and the researcher has no control over the variables but could only report what has happened or what is happening. Explanatory design, the latter, seeks to establish cause-and-effect relationships. Its primary purpose is to determine how events occur and which ones may influence particular outcomes (Kothari, 2004). They are characterized by research hypotheses that specify the nature and direction of the relationships

between or among variables being studied. The reason of using this method is to study the relationship between the stated dependent and independent variables of the study.

3.3 Population

A target population is the entire group of people or entities that the researcher is interested in and for which the researcher wishes to draw conclusions (Kothari, 2004). According to Ethiopian Investment Agency, EIA (2018) report on 2020, the dwellers in Addis Ababa are estimated roughly around 6 million but the number is expected higher for the fact that the population has been growing 3% annually and the local migrants to the capital city substantially increasing since the last two decades. Referring to federal ministry of health (FMoH) 2020, there are a total of 144 hospitals in the country of which 90 are run by government while the rest are owned by private investors.

Among 58 registered active hospitals in the vicinity of the capital city, only 14 are public owned whereas the rest 44 private hospitals are licensed to provide the service up to the standard. According to Ethiopian health tier, one of the criteria to level the healthcare institutes is their respective bed capacity. Based on minimum bed capacity requirement, those which have a minimum of 35, 50 and 110 beds are categorized under primary, secondary and tertiary level healthcare. There are a total of 33 primary hospitals, 10 secondary (general) hospitals and tertiary (specialized) hospitals in the city currently (Addis Ababa Health Bureau, 2019). General hospital shall mean a health facility at secondary level of healthcare tier which provides preventive, curative and rehabilitative service that requires diagnostic facilities and therapeutic intervention with a minimum capacity of 50 beds.

A population of admitted inpatients in general hospitals is targeted for the facts that it is believed that they may have relatively longer exposure to observe the overall medical treatment as well as the respective staffs' activity than outpatients (Monarch, 2009). The study population, thus, constitutes physicians (GPs and Specialists)who are granted the privialge to prescribe drugs and actively working private general hospitals (namely Hayat, Yordanos, Tirunesh Beijing, Korean (MCM), Kadisco, St. Yared, Bethezata, Bethel Teaching, Yearrer, Halelujah and St. Gebriel general hospital). The total number of physician, based on Addis Ababa Health Bearuo, acoounts for 207 physicians who are targeted as a study population.

3.4 Sampling Technique

According to Zikmund (2000), there are two main sampling methods, probability and non-probability sample. In this study the lack of access to a list of the population under study (physicians' list due to hesitant nature of hospital HRs) makes fully randomized samples (probability sampling) difficult to obtain. Thus, convenience non-probabilistic sampling will be applied to determine the sample size.

3.5 Sampling Size

Determining Sampling is the process of selecting a number of study units from a defined study population (Abiy, 2009). It is economical to take representative sample for the intended investigation when conducting census is unrealistic. Since the population of customers (physicians at private general hospitals) is known and counts 238 physicians in number, Yemane (1968) formula is applied. Accordingly, the sample size for physicians is computed as follows:

$$n = \frac{N}{1 + Ne^2} = \frac{238}{1 + (238 * .05^2)} = 150$$

Where: n -designates total number of physicians; e - designates maximum variability or margin of error 5% (0.05); and n- designates computed sample size.

A representative sample size of 157 respondents were taken from 10 general hospitals, on average about 15 physicians from each hospital to get the intended sample size.

3.6 Source of Data

According to Catherine (2007), data may be collected as primary, secondary or both. Primary data are originated by the researcher for the specific purpose of addressing the problem at hand. On the other hand, secondary data contains relevant data that has been collected for a different purpose, but from which the conclusion is valuable for the purpose. In this study basically the primary source, quantitative data from the physicians and specialists in the selected private hospitals, will be collected and used for analysis.

3.7 Data Collection Instruments

There are a number of techniques or scales to collect survey data (Creswell, 2009). This study applied questionnaire as a measuring scale to collect quantitative data regarding promotional mix tools, brand image and physician prescription behavior based on respondent's perception. The

intended data were collected through close-ended questionnaire. It is prepared by reviewing literature related to the objectives of the study and the questions are adapted from similar study by Raheem, Jolita, Dalia and Muhammad (2016). The questionnaire has four parts. The first part comprises the demographic characteristics of the respondents. Second part is all about the promotional mix practices of pharmaceutical companies in terms of advertising, sales promotion, direct marketing, personal selling and public relations/ publicity. The third part consists the brand image of prescription drugs. And finally, the last part refers to the physician prescription behavior attributes.

Standardized questionnaires were prepared which contained only closed ended questions, and distributed to the targeted respondents to self-administer. The questionnaires are scaled on five-point Likert Scales ranging from strongly disagree to strongly agree. The value assigned are 1 =strongly disagree, 2 = disagree, 3 = neither agreed nor disagreed, 4 = agree, 5 = strongly agree.

3.8 Reliability and Validity

The validity of test reveals the degree to which a measuring instrument measures what it is intended to measure (Saunders, 2004). The researcher ensured validity of the study by pre-testing (external validity) with questionnaires to correct any ambiguity in the questions when detected and also by asking clearly stated questions to the respondents. The validity of the research instrument is determined by the amount of build in error in measurement.Copies of the survey will be made accessible to experts in this study such as advisor for comments and opinions so as to create validity in terms of contrast, content, criterion and readability in order for making it suitable for the objectives of the study. Areas considered irrelevant to the study will be removed while others are collected and added. Content and face validity are also used in determining the validity of the study.

Regarding reliability, according to Mugenda (2003), reliability is the ability of a research instrument to produce consistent results after repeated trials. According to Nachmias (2004) reliability refers to the degree to which a measuring instrument includes variable errors that appear variably from observation to observation during any one measurement attempt or at the same measuring instrument. It can be considered as a means of assurance for accurate coding and numbering to the subjects. A reliability computation is also used to compute mean reliability coefficient estimates for Cronbach Alpha with a significance level of $p \leq 0.05$.

The use of Cronbach Coefficient to measure reliability of instrument enables to identify the strength of items included in the questionnaire such that measure between 0.7 and 1.0 signifies a strong consistency of item used in questionnaire (Mugenda, 2003). However, the acceptable Alpha value that meets the statistical prerequisite for the instrument to be characterized as reliable should be between 0.70 and 0.9 as the value more than 0.9 could be an implication of redundant variables measuring same subject. The Alpha score for the questionnaires falls within the given range, the data collection instrument would be taken as the suitable tool for conducting data analysis due to its capability of producing stable and consistent results (Travakol, 2011).

As shown on Table 3.2., the reliability of the questionnaire was tested by conducting a pilot test. The calculated Cronbach's Alpha for all the five promotional mix, brand image and prescription behavior of physician variables' reliability test was found to be r = 0.844 on average. This indicates the stability and suitability of the results for this study.

Table3.1. Reliability Test Results

Measurement	**No. of Items**	**Cronbach's alpha**
Advertising	4	.880
Sales Promotion	4	.709
Direct Marketing	4	.918
Personal Selling	5	.730
Publication	4	.836
Brand Image	5	.791
Prescription Behavior of Physician	6	.784
Reliability of All Items	**32**	**.844**

(Source, Own Survey, 2021)

3.9 Data Analysis and Presentation

The study uses multi-regression analysis models for testing the hypotheses drawn from the conceptual framework. Regression analysis is a statistical method to deal with the formulation of mathematical model depicting relationship amongst variables which can be used for the purpose of prediction of the value of dependent variable, given the value of the independent (Kothari,2004).

Linear regression estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable.

Model Specification - Regression analysis is a statistical method to deal with the formulation of mathematical model depicting relationship amongst variables which can be used for the purpose of prediction of the value of dependent variable, given the value of the independent (Kothari, 2004). The basic aim is to see the extent to which the pharmaceutical promotional mix practice affects the overall physician prescription behavior and mediating role of prescription drug brand image in terms of coefficient of determination (r^2 value), the regression coefficient (beta coefficient) and the p-values (ANOVA Test) for the significance of each relationship.

Empirical model applied in this study is, thus, formulated a multi-regression analysis model for investigating individual effect of each independent variable. To do so, the relationship between the variables is formulated as:

Information:

X - Promotional Mix (Independent Variable)

Y_1 - Brand Image (Mediating Variable)

Y2 - Physician Prescription Behavior (Dependent Variable)

- *The effect of promotional mix on physician prescription behavior*

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \ldots\ldots\ldots\ldots\ldots \text{Eq. 1}$$

Where, X_0 = Promotional Mix Practices; x_1 = Advertising; x_2 = Sales Promotion; x_3 = Direct Marketing; x_4= Personal Selling; x_5 = Public Relation/ Publicity; e = error term;

- *The effect of promotional mix on brand image*

$$Y_1 = f(x) = \beta_0 + \beta_1 X + e \ldots\ldots\ldots\ldots\ldots \text{Eq. 2}$$

- *The mediating effect of brand image on the relationship between promotional mix and physician Prescription Behavior*

$$Y_2 = \beta_{con} + \beta_{PB2} X + \beta_{PB2} Y_1 + e \ldots\ldots\ldots\ldots\ldots \text{Eq. 3}$$

Multiple linear regressions is conducted to identify the relationship and to determine the most dominant variables of promotional mix practices that influence the physician prescription behavior; along with the mediating role of prescription drug brand image.

3.10 Ethical Considerations

It is important to consider ethical principles when conducting a business research. Ethical issues are categorized into four different types: harm to participants, lack of informed consent, invasion of privacy and deception (Bryman, 2011). In this study, there are descriptive questions about the respondent's' age and gender but this information is not enough to identify the person. The second ethical principle to consider is the lack of informed consent. The third ethical principle concerns the invasion of privacy. In this study the respondent has the opportunity to skip a question if it is judged sensitive. Furthermore, this study is not of a sensitive nature which enhances the respondents' willingness to answer. The fourth ethical principle refers to deception which occurs if respondents are led to believe that a research is about something else than what it is. After taking these ethical principles into considerations and fully live up to the requirements, it can be classified as ethical.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

This chapter presents the data analysis and discussion of the research findings. Here, the data analysis and the respective interpretations are two main parts which have been carried out to attain the specific objectives of the study. The first part refers to the description statistics. The descriptive statistics helps in describing the demographic characteristics of the respondents and the detailed descriptions of the study variables (promotional mix, brand image and prescription behavior of physicians). Frequency, mean and standard deviation are mainly applied descriptive statistics. The second part comprises the assumption test for the regression model, correlation test and the regression analysis in terms of model summary, ANOVA test and coefficient determination values. The data analysis was made with the help of Statistical Package for Social Science (SPSS 21.0).

For the analysis, primary data were collected through self-administered questionnaires. The data included personal information of the respondents, five dimensions of promotional mix, brand image prescription behavior of physician. Based on the calculated sample size, a total of 150 questionnaires were distributed. Of which 139 questionnaires were collected and the response rate accounted for 75.1% of the total distributed questionnaires. In order to make the collected data suitable for the analysis, all questionnaires were screened whether completed. During data editing, the collected questionnaires were further checked for errors and 6 incomplete questionnaires were identified and discarded. Therefore, out of the 150 collected questionnaires, 133 were found to be valid and used for the final analysis.

4.1 Descriptive Analysis

To provide a clear picture of the survey, the demographic characteristics of the respondents along with their respective perceptions on promotional activities, brand image and overall prescription behavior of physicians have been described and presented as below. The first part of the questionnaire consists of the general profile of respondents. This part of the questionnaire demanded a limited amount of data related to general information about the respondents. Second, the study variables namely promotional mix, brand image and physician prescription behavior were also summarized accordingly.

4.1.1 Demographic Characteristics

Demographic profiles of the respondents in terms sex, age, specialty, practice setting and experience are briefly described. These variables help to identify the background of the respondents to some extents. Table 4.1.

Table 4.1 Demographic Characteristics of Respondents

Description		N	Frequency	Percent (%)
Sex	Male	133	109	82.0
	Female	133	24	18.0
Age	Below 30 years	133	33	24.8
	30 – 45 years	133	71	53.4
	46 – 60 years	133	20	15.0
	Above 60 years	133	9	06.8
Specialty	General practitioner	133	64	48.1
	Specialist	133	39	29.3
	Consultant	133	16	12.0
	Other	133	14	10.5
Experience	Less than 5 years	133	31	23.3
	5 – 10 years	133	44	33.1
	11 – 15 years	133	22	16.5
	More than 15 years	133	36	27.1
	Total	133	133	100.0

(Source, Own Survey, 2021)

As shown on Table 4.1., 109(82.0%) of the respondents were found to be male and the remaining 24(18.0%) of the respondents were female. It implies that there were marginally more male respondents than female counterparts.

Referring the age category, 71(53.4%) respondents were within 31-45 years old, followed by 33(24.8%) below 30 years and 20(15.0%) within 46-60 years. The rest 9(6.8%) were found to be above 60 years old. This shows that adults physicians were more in number than the others.

Regarding the specialty of participants, 64(48.1%) were specialized while 39(29.3%) general practitioners, 16(12.0%) consults and the rest 14(10.5%) constituted other specialities (intern, residents, etc.). This indicates that specialized physicians in the selected private hospitals were

relatively more in number. Participation of specialized physicians in this study would have the possibility to provide more practical information regarding the subject matter.

Almost one third, 44 (33.1%) of the respondents possessed 5-10 years of work experience, while 31(23.3%) had less than 5 years experience. The other 22(16.5%) respondents have served for 11-15 years; and the rest 36 (27.1%) have worked more than twenty years. This has an implication that physicians participated from different levels of experience which might help to get insight from different perspectives.

In general, the demographic characteristics of the respondents showed that majority of the participants were male specialized physician aged from 30 – 45 years with 5 – 10 years of work experience.

4.1.2 Description of Study Variables

4.1.2.1 Advertising

Advertisement is a paid non-personal promotion of ideas, goods and service by identified sponsors. It includes promotion of drugs in non-personal way through literatures, magazines or banner in conferences. Catch cover of free samples and words on the packaging of gift items are also included under advertisements (Pitt, 1988).

Table 4.2 Respondents' perception on Advertising

Advertisement	N	Mean	Std.
Firms promote drugs through scientific journals encourage physician to prescribe drug	133	2.29	0.914
Advertising on catch cover of free samples motivate physicians prescribe the drug	133	2.43	0.791
Words on the packaging of gift items encourage physicians to prescribe the drug	133	2.66	0.850
The constant information from awarded scientific journals and scientific publication	133	3.69	0.548
Average Advertising score	133	2.77	0.776

(Source: Own Survey, 2021)

Referring Table 4.2, the results showed that firms' drugs promotion through scientific journals encouraged them to prescribe a specific brand drug(mean, 3.69). However, words on the packaging of gift items and the constant information from awarded scientific journals and scientific publication didn't encourage them to prescribe the drug as rated with mean scored value of 2.66 and 2.43 respectively. They also believed that advertising on catch cover of free samples didn't motivate them to prescribe a drug (mean 2.29). This implies that, except continuous information provided by

articles on different awarded scientific journals, pharmaceutical advertising didn't convince them to prescribe a specific drug brand as the grand mean scored value was found to be 2.77.

4.1.2.2 Sales Promotion

Sales promotion is any initiative undertaken by an organization to promote an increase in sales, usage or trial of a product or service (Aker, 1999). In this regard, results on Table 4.3 showed that the respondents acknowledged pharmaceutical firms' interest to educate the physicians on new medicine through financing them to participate in international scientific conference motivated them to prescribe a specific brand (mean 4.24). Financial incentives offered by pharmaceutical representatives also motivated physicians to prescribe a branded drug (mean 4.23) even though there is a similar competitive medicine in the market. They also believed that Add-value incentives such as office practice items, patient record forms, and etc. influenced physician's prescription behavior (mean 3.61). Whereas, low-cost gifts (pen, paper weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers didn't remind them drug brand while prescribing (mean 2.62). Overall, the respondents agreed (mean 3.61) that pharmaceutical sales promotion motivatedphysicianto prescribe a specific brand. This implies that promoting drug brand through small gifts of various values like pens, paper weights, writing pads etc. reminded them the product despite competitive alternative medicines are avail in the market.

Table 4.3 Respondents' perception on Sales Promotion

Sales Promotion	N	Mean	Std.
Low-cost gifts (pen, paper weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers remind drug brand while prescribing	133	2.62	0.738
Financial incentives, given that there are similar competitive medicines motivate physicians to prescribe	133	4.23	0.988
The firm's interest to educate the physicians on new medicine through financing their participation to international scientific conference	133	4.24	1.003
Add value incentives such as office practice items, patient record forms, etc. given that there are competitive alternative medicines	133	3.61	0.664
Average Sales Promotion score	133	3.71	0.848

(Source: Own Survey, 2021)

4.1.2.3 Direct Marketing

Direct marketing is a type of advertising campaign that seeks to elicit an action from a selected group of consumers in response to a communication from the marketer. The communication itself may be in any of a variety of formats including postal mail, telemarketing, and direct e-mail marketing and point-of-sale interactions (Aker, 1999). Based on this notion, the results on Table 4.4 showed that physicians preferred peer-group detailing (mean 3.71) and also slightly agreed (mean 3.46) that e-detailing (mean 3.46) than sales representative to prescribe a brand. However, the respondents strongly disagreed (mean 1.89) with the capability of encouraging prescription through brand advertisements direct to physician's post, telephone or email. Whereas, they showed their indifference on physicians' online real-time support with information provided by the firm (mean 3.17). The implication is that peer-group influence is more pronounced than other direct marketing activities. Moreover, overall perception of the respondents regarding the direct marketing strategy of drug suppliers on physician prescription behavior showed their indifference as the grand means score value was found to be (3.06).

Table 4.4 Respondents' perception on Direct Marketing

Direct Marketing	N	Mean	Std.
The brand advertisements direct to physician's post, telephone or email encourages prescription	133	1.89	0.701
Online/ real time support by pharmaceutical suppliers motivate physicians to prescribe a drug brand	133	3.17	0.733
Physicians prefer to electronic detailing than sales representative detailing to prescribe medicine	133	3.46	0.917
Detailing from peer groups is helpful on physician drug prescription choice	133	3.72	0.851
Average Direct Marketing Score	133	3.06	0.801

(Source: Own Survey, 2018)

4.1.2.4 Personal Selling

Personal selling is one kind of direct marketing. It is the detailing by the promotional personnel of the brand and the way the sales personnel handle objects and use visual aids. Drug sampling, price benefit, buy one get one free comes under the domain of personal selling (Campbell, 2007). Based on this, the results on Table 4.5 revealed that majority of the respondents strongly agreed on the

sales representatives' free drug sample demonstration, physician – detailer interpersonal relationships and frequency of sales representative's visit persuade physician to prescribe medicine as voted with mean scored value of 4.70, 4.47 and 4.03 respectively. Similarly, the detailers' scientific knowledge on the medicine (mean 3.99) and provision of sales representatives' accurate and up-to-date detailing regarding the brand drug (mean 3.91) encourage physician's prescription decision. The results also showed that the influence of the overall personal selling on physician's prescription behavior was perceived strongly with average scored value of 4.13. This implies that personal relationship, free samples and knowledge of the detailer are the related factors in the course of physician's brand switch over through time.

Table 4.5 Respondents' Perception on Personal Selling

Personal Selling	N	Mean	Std.
Sales representatives provide accurate/ up to date detailing regarding drug brand	133	3.91	0.509
The detailers' knowledge on the drug encourages physician to prescribe a brand	133	3.99	0.761
Frequency of sales representative's visit has an influence on prescription choice	133	4.03	0.315
Sales representatives demonstrate free drug sample to persuade physician to prescribe a brand	133	4.70	0.409
The physician – detailer interpersonal relationship motivates the physician to prescribe a specific brand of drug.	133	4.47	0.473
Average Personal Selling Score	133	4.22	0.493

(Source: Own Survey, 2021)

4.1.2.5 Public Relations/ Publicity

According to Campbell (2007), in pharmaceutical marketing, publicity includes various program designs to promote the brands through printed publications. It involves product launch meeting, clinical or scientific meetings, conducting a discussion by a specialist doctor related to products, sponsoring physician for conferences etc. In this regard, the results on Table 4.6 revealed that the mean scored values of the public relations/ publicity attributes ranges from 4.73 to 4.44. It can be taken as implication of study participants' strong agreement on the influence of public relations/ publicity on physician prescription behavior. Among them, provision of continuous medical education (CME) (mean 4.73); printed materials like brochure, fliers, etc. (mean 4.61); and sponsor for conferences (mean 4.60) took the highest scored values in descending order. Similarly,

Suppliers conducting a discussion by a peer groups (mean 4.59) and launch meeting, lunch or dinner on several special days (mean 4.44) encourage them prescribing a brand is helpful to remind drug to prescribe.

Table 4.6 Respondents' Perception on Public Relations/ Publicity

Public Relations/ Publicity	**N**	**Mean**	**Std.**
Supplier's product launch meeting, lunch or dinner on several special days encourages physician prescribing drug brand	133	4.44	0.801
Suppliers provide printed materials (brochure, fliers, etc.) to influence physicians to choose a brand drug	133	4.61	0.918
Suppliers conducting a discussion by a peer groups (specialist doctors) are helpful to remind drug brands to prescribe	133	4.59	0.677
Suppliers sponsor physician for conferences to influence them to prescribe their brands more.	133	4.60	0.834
Provision of continuous medical education (CME) by suppliers encourages physicians to prescribe a brand drug	133	4.73	0.552
Average Public Relations/ Publicity Score	133	4.59	0.756

(Source: Own Survey, 2021)

4.1.2.6 Brand Image

Brand is the most valuable asset for any company and has been widely acknowledged as an essential reason for consumer choice and serves as a tool for consumers to check the differentiation of the products and their uniqueness (Chung, 2013). In this notion, the results on Table 4.7. Show that the respondents acknowledged that drug brand logo's ease of recognition (mean 4.32), having different images from other competitive products (mean 4.04), and familiarity of the brand's country of origin (mean 4.73) affect their perception towards the drug brand image.

Table4.7. Respondents' Perception on Drug Brand Image

Brand Image	N	Mean	Std.
Pharmaceutical supply "x" brand could be easily recognition.	133	4.32	0.606
Pharmaceutical supplier "x" has a differentiated image from other suppliers.	133	4.04	0.772
My familiarity with country of origin of a drug brand affects the way I look at Pharmaceutical supplier "x"	133	4.73	0.552
I trust Pharmaceutical supplier "x" brand.	133	3.73	0.528
I admire the other physicians who prescribe drug brand of drug supplier "x".	133	3.69	0.573
Average Brand Image Score	133	4.17	0.565

Besides, they admitted that they had brand trust (mean 3.73) and admiration of same brand users (mean 3.69). The overall perception toward a branded drug was perceived positively as the grand mean scored value equates 4.17. This implies that trust, country of origin and ease of brand names or logos to remember enrich consumer confidence in facilitating their decision-making based on their experience and credence qualities.

4.1.3 Physician Prescription Behavior Dimensions

Results on Table 4.8 shows majority expressed their strong agreement with financial sponsorship (mean 4.59), initial/ clinical observation perception of the drug (mean 4.10), and peer groups (mean 4.03). However, they strongly disagreed the ability of sales promotion (like gift, free sample, visit, etc.) to encourage physicians to prescribe a drug(mean1.76). On the other hand, they were indifferent regarding the detailing of sales representative(mean 3.44) and information regarding a drugbrand on scientific journals slightly affected their brand preferences (3.13). The overall physicians' perception behavior towards a given drug brand was fond to be moderate or slightly positive (mean 3.55) implying that they were trying to trade off between financial and psychological benefits to maintain both sides (patient's wellbeing and sales promotion) satisfied. But it may arise a paradox between being ethical and being beneficiary at a time at the cost of patients' wellbeing. Nonetheless, financial sponsorship (training, continuous medical education, gatherings, etc.), initial (clinical observation) perception of the drug, and peer groups (trainer, colleagues, senior specialists)have relation withphysician prescription behavior.

Table 4.8 Physician Prescription Behavior

Physician Prescription Behavior	**N**	**Mean**	**Std.**
Initial (clinical observation) perception of the drug matters most to me	133	4.10	0.706
Detailing of sales representative has a role on my prescription behavior	133	3.44	0.470
Sales promotion doesn't encourage me to prescribe a medicine	133	1.76	0.614
Advertising brands on scientific journals inspires my drug preference	133	3.13	1.001
Financial sponsorship persuades me to prescribe a medicine	133	4.59	0.338
Peer groups (trainer, colleagues, senior specialists) influence my prescription behavior considerably	133	4.03	0.491
Average Physician Prescription Behavior Score	133	3.51	0.603

(Source: Own Survey, 2018)

4.2 Inferential Statistics

Inferential statistics uses sample measurements of the subject and make generalization about the larger population (Zikmund, 2010). It comprises different assumption of data test for their suitability or fitness to the intended regression model. The assumptions tests are data normality, multicollinearity, linearity and homoscedasticity test. Finally, the multi-regression analysis in terms of model summary, ANOVA test and determination of beta coefficients were conducted to address the objectives of this study.

4.2.1. Assumption Test for Linear Regression Model

Prior to running the regression, all parametric tests in statistical analysis assumptions about the data checked and hold on to these assumptions for precise interpretation and model integrity (Shieh, 2010). According to Sapp (2006) multiple regressions have four assumptions that is linearity, normality of the distribution, multicollinearity of variables; homoscedasticity (constant variance) of the errors is applied in the case of cross-sectional data.

4.2.1.1 Multicollinearity

Multicollinearity is a situation in which two or more predictor variables are highly correlated. According to Filed (2009), the test indicates that there is a multicollinearity issue within the independent variables when Variance Inflation Factor(VIF) value of independent variables greater than the threshold level (VIF $\leq$10).I.e., when independent variables are highly related, there is

"overlap" or sharing of predictive power. Thus, the impact of multicollinearity is to reduce any individual independent variable's predictive power by the extent to which it is associated with the other independent variables. "Tolerance" and "variance inflation factors" (VIF) values for each predictor is a means of checking for Multicollinearity. Tolerance value below 0.1 and VIF value above 10 percent indicate a multicollinearity problem (Robert, 2006).

In this model the tolerance value for all of the independent variables is greater than 0.10; therefore, multicollinearity assumption has not violated. This is also supported by the VIF values which are well below the cut-off point of 10. These results are not surprising, given that the Pearson's correlation coefficients between these independent variables were less than 0.7.

Table 4.9. Multicollinearity Test

Coefficients [a]			
Model		**Collinearity Statistics**	
		Tolerance	**VIF**
1	Advertising	0.386	2.591
	Sales Promotion	0.305	3.279
	Direct Marketing	0.511	1.957
	Personal Selling	0.317	3.155
	Public Relations/ Publicity	0.325	3.077
	Brand Image	0.444	2.252
[a.]Dependent Variable: Prescription Behavior of Physician			

(Source: Own Survey, 2021)

4.2.1.2 Homoscedasticity

The assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables (Osborne & Waters, 2002). This means that researchers assume that errors are spread out consistently between the variables (Keith, 2006).

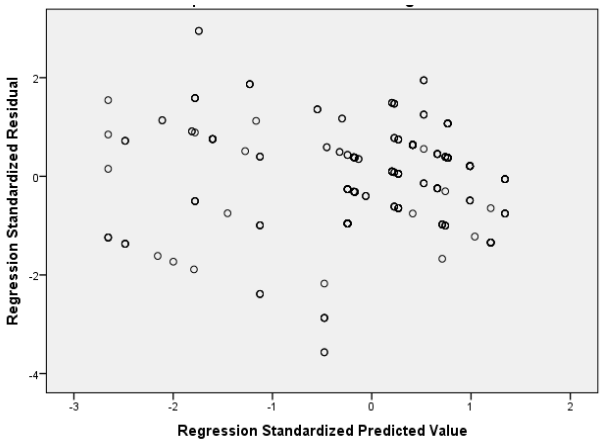

Figure 4.1. Scattered Plot of Homoscedasticity Test

Homoscedasticity can be checked by visual examination of a plot of the standardized residuals (on Y-axis) by the regression standardized predicted value (on X-axis) (Osborne & Waters, 2002). If there is no violation of assumptions, standardized residuals should scatter randomly around a horizontal line of zero. Ideally, residuals are randomly scattered around zero (the horizontal line) providing even distribution. In addition, the inspection of the plots is observed a good variability in the plots and hence, the variables fulfilled the homoscedasticity assumption as well.

4.2.1.3 Linearity Test

Linearity defines the dependent variable as a linear function of the predictor (independent) variables. Multiple regressions can accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne& Waters, 2002). Residual plots showed that there were no the residuals departure from linearity and would expect to see a random scatter points about the horizontal line. Hence, by using visual inspection of the scatter plot, it demonstrated about the linear relationships of dependent variable with each of the independent variables in this study. Hence, the variables met the linearity assumption.

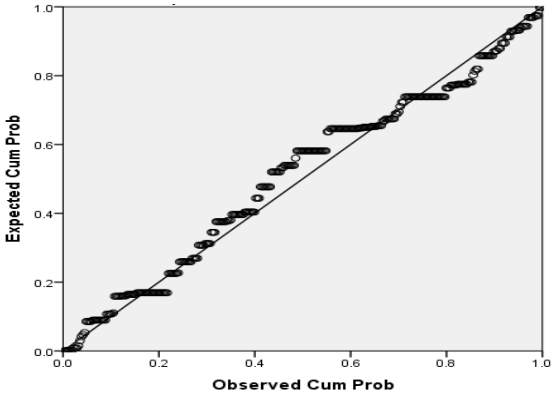

Figure 4.2. Scattered Plot of Linearity Test

4.2.1.4. Multivariate Normality Test

Normality test examines whether the data is normally distributed in normal distribution curve or not. There are two ways of testing the normality, by graphical method and statistical method. A common rule to thumb test for normality is to run descriptive statistics to get skewness and kurtosis, then use the criteria that kurtosis should be within the mean +2 to -2 range when the data are normally distributed (Garson, 2012). As it can be seen in Table 4.10 all the absolute values of skewness and the kurtosis are between -2 and +2. Hence, it confirmed that data witness to normality assumptions.

Table 4.10 Normality Test

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Advertising	133	-.561	.130	1.133	.260
Sales Promotion	133	-.581	.130	.679	.260
Direct Marketing	133	.437	.130	.182	.260
Personal Selling	133	.113	.130	.803	.260
Public Relations/ Publicity	133	.914	.130	.480	.260
Brand Image	133	.607	.130	.237	.260
Prescription Behavior of Physician	133	.085	.130	.774	.260
Valid N	133				

(Source, Own Survey, 2021)

To summarize, the independent and dependent variables met all the assumptions indicated that the model that the researcher got for a sample could accurately applied to the population of interest. That means the coefficients/ parameters of regression said to be unbiased as stated in (Field, 2005).

4.2.2 Correlation Analysis of Variables

To explore the relationship between promotional mix tools, brand image and overall physician prescription behavior, Pearson correlation was first investigated. The five dimensions of promotional mix were taken as independent variables; brand image as a mediator; and overall physician prescription behavior as a dependent variable in this study at significant value of 95% (p-value = .05).

Significance level illustrates how likely a result is to be due to chance (Kothari, 2004). The most common significance level is 0.95, meaning that the finding has a 95% chance of being true. Therefore, for this study, a significance level of 0.95 was set. The figure 0.05 is called the p value, indicating the 95 % probability that any selected samples from the study population would give the same results. Therefore, any statistical results obtained from the study having p-values greater than 0.05 considered as statistically insignificant.

The results on Table 4.11. shows that all promotional mix tools have positive relationship with overall physician prescription behavior. Public relations/ publicity wasfound to be significantly strong positive relation with overall physician prescription behavior ($r = 0.698, p<0.05$). Personal selling and sales promotion also had strong and significant relation with prescription behavior ($r=0.518, p<0.05$ and $r=0.408, p<0.05$) respectively. However, advertisement and direct marketing had significant but weak positive relations withprescription behavior of physician as the correlation coefficient values depicted relatively lowest ($r=0.027$ and $r=0.199$at $p<0.05$)respectively. Besides, brand image had also positive and significant relationship with all the promotional mix and physician prescription behavior. This implies that dimensions of promotional tools and brand image had positive relationship but wasn't as such highly correlated each other. This could be taken as a confirmation that there was no multicollinearity issue to proceed for regression analysis (r = .70).

Table 4.11Correlation Analysis of Variables

Dimensions	ADS	SPR	DMK	PSG	PRP	BIM	PPB
Advertising [ADS]	1.00						
Sales Promotion [SPR]	.253	1.00					
Direct Marketing [DMK]	.279*	.031	1.00				
Personal Selling [PSG]	.366*	.437	.113*	1.00			
Public Relations/ Publicity [PRP]	.418*	.622*	.519*	.225	1.00		
Brand Image [BIM]	.331*	.419*	.382**	.483*	.447	1.00	
Overall Prescription Behavior [PPB]	.027**	.408*	.199**	.518*	.698*	.577*	1.00

*Correlation is significant at the 0.01 level

**Correlation is significant at the 0.05 level

(Source, Own Survey, 2021)

4.2.3 Regression Analysis

In order to investigate the effect of promotional mix on overall physician's prescription behavior mediated by brand image, three regression analyses were carried out. First, a multiple linear regression has calculated to predict the physician prescription behavior by promotional mix tools namely advertising, sales promotion, direct marketing, personal selling and public relations/ publicity. Second, brand image was regressed by same promotional mix tools. Finally, physician prescription behavior also regressed by overall promotional mix tools and brand image to examine the moderating role of brand image on the relationship between physician prescription behavior and promotional mix tools.

Each multiple regression analysis comprises model summary, ANOVA test and beta coefficients. These analyses answered the objectives of this research, which was about the effects of independent variables on dependent variable along with the role of mediating variable.

Information regarding the model specification:

X - Promotional Mix (Independent Variable)

Y_1 - Brand Image (Mediating Variable)

Y2 - Physician Prescription Behavior (Dependent Variable)

The effect of promotional mix on physician prescription behavior

$$Y_2 = \beta_0 + \beta_1 ADV + \beta_2 SPR + \beta_3 DMR + \beta_4 PSL + \beta_5 PRP \ldots\ldots\ldots\ldots\ldots \text{Eq. 1}$$

Referring the model summary, overall physician prescription behavior is explained by promotional mix tools such as advertising, sales promotion, direct marketing, personal selling and public relations. In this case the R^2 value was found to be .761 which is expressed by a percentage. This means that the model explains 76.1% of the variance in the overall prescription behavior, thereby confirming the goodness of fit of the model. The remaining change (23.9%)in physician prescription behavior may be accounted for variables other than the variables included in this study. According to Pallant (2005), R^2 that exceeds 0.40 can be considered as an acceptable result.(Appendix III, Table I)

Referring the variation of analysis (ANOVA) Test, F-test is a test for examining the significance of the multiple-linear regression model (Ghozali, 2011). It tests the feasibility of the regression model and analyzes the existence of the significant simultaneous impact given by the independent variables to the dependent variable. The result shows that all five explanatory variables had significant positive relationship with the dependent variable at F = *88.253, p<0.05.*(Appendix III, Table II)

Table 4.12 Regression Coefficients

Coefficients [a]

Model		Unstandardized Coefficient		Standardized Coefficient	t	Sig.
		β	Std. Error	Beta		
1	(Constant)	1.009	.260		3.881	.004
	Advertising	.027	.776	.027	0.035	.109
	Sales Promotion	.408	.848	.401	0.481	.000
	Direct Marketing	.199	.101	.193	1.970	.042
	Personal Selling	.318	.493	.302	0.645	.000
	Public Relations	.498	.756	.479	0.659	.000

[a] *Dependent Variable: Physician Prescription Behavior*

(Source: Own Survey, 2021)

Regarding regression coefficients, the standardized coefficient (beta) measures the individual effect of promotional mix dimensions towards physician prescription behavior. Except advertising (B = .027, p> .05), the other four variables namely sales promotion (B = .4.01), direct marketing (B = .193), public relations (B = .479) and personal selling (B = .302) at p<0.05 significance level. This implies that, except advertising, each promotional mix tools had its own unique contribution to

explaining the physician prescription behavior. Moreover, public relations/ publicity had relatively the highest effect on physician prescription behavior followed by sales promotion and personal selling. Hence advertising has no significant effect on physician prescription behavior, the effect of the rest pharmaceutical promotion mix dimensions are represented as:

$$Y_2 = 1.009 + .401SPR + .193DMR + .302PSL + .479PRP$$

In summary, referring Appendix III, Table V, the overall effect of promotional mix on physician prescription behavior was found to be B = .669, p< .001. it can be concluded that overall promotional mix elements had positive and strong significant effect on prescription behavior of physician in Ethiopian private general hospital's context.

The effect of promotional mix on brand image

$$Y_1 = f(x) = \beta_0 + \beta_1 X + e \ldots\ldots\ldots\ldots\ldots \text{Eq. 2}$$

Referring the model summary of the analysis, there is a positive relationship between promotional mix and brand image. The value of R^2 is found to be 82.6%. It implies that the variation in 82.6% of the variation in brand image is explained by promotional mix tools. I.e., Thus, it can be concluded that the goodness of fit, which accounted for about 82.6% of variation of brand image, the discrepancy between the observed and the expected value (residual) is relatively lower.(Appendix III, Table III)

The ANOVA Test, F-value of 170.270 is significant at p<0.01. Therefore, it can be inferred that with 82.6% of variance (R-Square), overall promotional mix dimension is significant and the model appropriately measures the brand image. That means, the regression model predicts overall brand image which has been significantly explained by the promotional mix.(Appendix III, Table IV)

Based on the beta coefficient results, over promotional mix had positive and significant effect on overall brand image as B= .392, p<.001. The beta coefficient of brand image is explained by overall promotional mix.

Substituting the result in the model yields:

$$BRI = .249 + .313PRM$$

Where, PRM stands for Promotion Mix and BRI for Overall Brand Image

Table 4.13 Regression Coefficients

Coefficients[b]

Model		Un standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.249	.107		2.327	.000
	Physician Prescription Behavior	.313	.110	.392	2.845	.000

[b] Dependent Variable: Brand Image

The mediating effect of brand image on the relationship between promotional mix and physician Prescription Behavior

To evaluate the mediating role of brand image on the relationship between promotional mix and physician prescription behavior, multiple linear regression was conducted as the model depicts:

$$PPB = \beta_0 + \beta_{PRM}X + \beta_{BIM}Y_1 + e \ldots\ldots\ldots\ldots\ldots \text{Eq. 3}$$

Referring the model, overall physician prescription behavior was regressed on overall promotional mix and brand image variables. The independent variables (promotional mix elements namely advertising, sales promotion, direct marketing, personal selling and public relations) and the moderating variable – brand image contribute to statistically significant level at p-value < 0.001.

The R^2= 0.921 indicates that there is a strong correlation between the observed customer brand loyalty and those predict regression model. In terms of variability in observed brand loyalty, accounted for by the fitted model, this amounts to a proportion of R^2 = 0.848, or 84.8% showed in Table - 11. Since by definition R^2 will increase when further terms are added to the model even if these do not explain variability in the population, the adjusted R^2 is an attempt at improved estimation of R^2 in the population (Landau and Brian, 2004). Use of this adjusted measure leads to a revised estimate that 84.8% of the variability in brand loyalty in the population can be explained by the five explanatory variables. The other variables that were not considered in this study explain about 15.2% of the variability of brand loyalty in the population.

Table 4.14. Model Summary

Model Summary [b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.942[a]	.887	.881	.298

[a] Predictors: (constant), Promotional Mix, Brand Image

[b] Dependent Variable: Overall Physician Prescription Behavior

The assumption of F-test for the null hypothesis that none of the explanatory variables are related to physician prescription behavior, or in other words, that R^2 is zero (Landau & Brian, 2004). The ANOVA test revealed that the F-value = 55.966 is much far greater than zero. Thus, these separate variables are significantly different at $p<.001$.

Table 4.15: ANOVA Test

ANOVA [a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	77.582	6	12.930	55.966	.000[b]
	Residual	29.111	126	0.231		
	Total	106.693	132			

[a] Predictors: (constant), Promotional Mix, Brand Image

[b] Dependent Variable: Physician Prescription Behavior

The results of the beta coefficients show that there is a significant positive effect of the promotional mix elements on physician prescription behavior through brand image, which is evidenced by the total effect [0.881 (.657 + .224)] > direct effect (0.657). This means, the effect of sum of both promotional mix and brand image is greater than the effect of promotional mix alone on prescription behavior of physician.

Table 4.16. Regression analysis of independent, mediator and dependent variable

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.406	.132		3.076	.000
	Promotional Mix	.669	.122	.669	5.484	.000
	Brand Image	.281	.047	.275	5.979	.000
[a.] Dependent Variable: Physician Prescription Behavior						

Source: SPSS Output, 2021

The higher the perception of the brand image of a drug, the higher the promotional mix to enhance the physician prescription behavior. In this case, brand image affects the relationship between promotional mix and prescription behavior. And can be concluded that brand image has a mediating role between the two variables.

Based on the results analyzed above, the proposed hypotheses $H_{2,3,4,5,6\&7}$are supported while H_1 is refuted. Summary of the hypotheses are presented on Table 4.15.

Table 4.17 Summary of Proposed Hypotheses

Code	Hypothesis	Status
H_1	Advertising has positive and significant effect on physician prescription behavior	Refuted
H_2	Sales promotion has positive and significant effect on physician prescription behavior	Supported
H_3	Direct marketing has positive and significant effect on physician prescription behavior	Supported
H_4	Personal Selling has positive and significant effect on physician prescription behavior	Supported
H_5	Public relation has positive and significant effect on physician prescription behavior	Supported
H_6	Promotion mix has positive and significant effect on brand image	Supported
H_7	Brand image has mediating effect on the relationship between promotional mix and physician prescription behavior	Supported

(Source: Own Survey, 2018)

4.3 Discussion

The aim of this study was to inveestigate the effectb of promoitional mix elements on physician prescription behavior through the mediation of brand image taking private general hospitals in Addis Ababa as a case. Based on the regression analyses, the results of the findings revealed that except advertising the other pharmaceutical promotions namely sales promotion, direct marketing,

personal selling and public relations/ publicity had positive and significant effects on prescription behavior of physician in private general hospitals in Addis Ababa.

The present study also identified the influence of parmaceuticalpromotional mix tools on prescribing behaviorand found to have except advertising, the other promotional mix elementshave impacted physicians' prescribing behavior. Previous studieshave, however, focused on identifying the psychographic factors that influence physicians prescribing behavior which determined that unobservable physicians' attributes are strong determinants of prescribing preferences (Rice, 2018).

As can be seen from the regression analyses, overall promotional mix elements had positive and significant effects on prescription behavior of physician. This finding is in agreement with Martin (2019). He concluded that the major determinant of differences in the prescribing behavior of physicians emanated from pharmaceutical promotional climate. It is more pronounced in the environment of most prescription takes place particularly in developing countrieswhere the non-medical factors influencing the prescribing behavior. These non-medical factors are primarily the individual factors affecting the doctors prescribing behavior through marketing initiatives taken by the pharmaceutical companies. In emerging markets like Ethiopia, where doctors are considered the most scares human resource, affecting their prescribing behavior is the key for every drug supplier.

However, media advertising had insignificant effect on precription behavior of physicians. The ban of drug advertising by regulatory bodies is believed to deteriorate the effect of media advertsing on prescribed drugs (Eyosias, 2016). This finding is alos supported by Dave (2015) whose study focused on the comaprative analysis of physician prescription behavior in deloped and developing countries' context. His findings reveled that physicians in countries which banned durg advertisement had less been less influenced compared to those who working in deloped countries.

It was also found that sales promotion had also significant and positive effects on prescription behavior of physician. Financial incentive in the form of sponsorship, continuous medical education and free samples are some of the determinant factors that affect the prescription behavior of a physician. Gift with high value is always appreciated by the physicians even though unethical and illegal in some countries' legal context. Sales personnel are always tried to find out the hidden need of a physicians. If they find it and solve it with proper item, then it will be a perfect gift to them and this may contribute in the prescription a lot. In medical institutes in Ethiopia (Eyosias, 2016), conference occurs in very frequent basis. Sponsoring this event is also an excellent way to get into

the good list of physicians. That's why it is considered as somehow effective to make good relation to physician's and this also reflects into the prescription.

Public relations and publicities had also significant and positive effects on prescription behavior of physician mediated by brand image of the drugs. Related printed materials on scientific journals, brochures, fliers, and magazines as well as public announcement of catastrophic drugs for the safety of the society as well as creating awareness of the physician with the medical representatives are mostly influence the prescription behavior of the physicians (Fieldman, 2019).

Personal selling had also significant and positive effects on prescription behavior of physician. A physician often prefers the quality of the product for his patient. That's why quality of the product is so much important (Salman, 2019). He explained that a quality product provides sales personnel extra confident to detail the brand in front of the physicians. Skilful detail of a product is necessary to promote a drug, especially for the newer molecule. New drug molecules are not really familiar to the physicians but a perfect detailing of that drug can create the opportunity to make a space into physician's prescription (Peter, 2017). Besides, this new information of existing product can be more accepted by a skilful detailing.

Mediation of brand image on the relationship between promotional mix elements and prescription behavior. It is a quiet simple equation. In Ethiopia, there are more than 150 pharmaceutical companies with 2,000 brands and more (Eyosias, 2016). For example, calcium, generic have been more than 15 brand names. Which one a doctor writes for the patient is merely depends on the reliable source of initial information that confirms clinically tested drugs with better innovation, financial initiatives and interpersonal relationship with sales representatives of a specific supplier.

The past studies have shown that the prescribing behavior can be influenced and doctors respond to different types of cues to change their prescribing pattern (Armstrong, 2016). The present study identified these cues and physicians in the study responded to these cues differently. Campbell (2007) identified that physicians' relationships with the industry vary according to physicians' personal and professional characteristics in prescribing behavior with respect to pharmaceutical industry interactions. In these regards, it can be seen that marketing promotions have significant effect in shaping physician prescription patters. As well as, drugs with prominent brand escales the drug preference of doctors through triggering and motivating them throgh different pharmaceutical promotion staregies.

This study is believed to shade light on the previous research that conceptualizes the fact that medical institution's practice of brand drug preferences is a dynamic process affected by number of factors (Prosser, 2003) and that the decisions could depend upon factors from core conceptual, habitual and drugaspects (Denig, 2002). Although the pharmacological criteria are generally used by the doctors in deciding which drug to prescribe, the findings of the study show that the pharmaceutical marketing communication strategyand brand image of the prescibed drugs' influences are also rated as important determinants in the doctors' decision to prescribe.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter includes summary of major findings, conclusions, recommendations of the study and implications for further research.

5.1 Summary of Major Findings

The study sought to investigate the effect of pharmaceutical promotion mix elements on physician prescription behavior through mediation of drug brand image in the case of private general hospitals in Addis Ababa. The reaction of physician working at selected public general hospitals towards pharmaceutical marketing and their effects on their prescription behavior along with the mediation role of drug brand image were analyzed through multiple linear regression model. The major findings of this study are summarized as follows:

Sp. Obj. – 1 - 5. The effect of promotional mix elements on prescription behavior of physician

- Overall promotional mix explains 76.1% (R^2 = .761) of the variance in the overall physician prescription behavior.
- Advertising had insignificant effect on prescription behavior of physician working in private general hospitals in Addis Ababa. The beta coefficient (B = .027, p> .05).
- Public relations/ publicity had relatively the highest significant positive effect on physician prescription behavior (B = .479, p< .05)
- Next to public relations, sales promotion had the strongest significant and positive effect (B = .401, p< .05) on physician prescription behavior
- Personal selling showed relatively the lowest significant and positive effect (B = .302, p< .05) on prescription behavior of the physicians.
- Direct marketing had the least significant positive effect (B = .193, p< .05) on physician prescription behavior of physicians working in private general hospitals in Addis Ababa.

Sp. Obj. – 6. The effect of promotional mix elements on brand image

- The value of R^2 is found to be 82.6% of the variation in brand image is explained by promotional mix tools.
- Based on the beta coefficient results, overall promotional mix had positive and significant effect on overall brand image as B= .392, p<.001.

Sp. Obj. – 7. The mediating effect of brand image on the relationship between promotional mix elements and brand image

- The results of the beta coefficients showed brand image had a mediating effect on the relationship between promotional mix and physician prescription behavior as it improves the effect of promotional mix elements on prescription behavior. It is evidenced by the total effect [0.881 (.657 + .224)] > direct effect (0.657).

5.2 Conclusions

The basic aim of this study was to investigate the mediating effect of brand image on the relationship between promotional mix and physician prescription behavior in the case of private general hospitals in Addis Ababa. Promotional mix elements which were considers in this study are advertising, sales promotion, direct marketing, personal selling and public relations/ publicity. It was also evaluated the mediating role of drug brand image in enhancing or shaping the patterns of physician prescription behavior through effective pharmaceutical promotion mix strategy. The prescription behavior was also considered in terms of physician preference of a specific drug brand despite the presence of different competitive drugs with same generic composition or contents. To address the objectives of this study, the multiple linear regression model considered promotional mix as independent, drug brand image as mediator while physician prescription behavior as dependent variable.

Based on the results of the analyses, except advertising, the other four dimensions of promotional mix elements had positive and significant effects on physician prescription behavior. Amongst them public relations/ publicity and sales promotion showed positive and relatively strongest effects on prescribing behavior of the physicians in private general hospitals. However, since advertising of prescription drugs are banned in Ethiopia, media advertising of drugs in the country is hardly exercised. In this and other unsought reasons, advertising had insignificant effect on physician's preference of a given drug brand. This finding is in agreement with Martin (2019) whose study explained that the major determinant of differences in the prescribing behavior depends on the pharmaceutical promotional climate. He argued that physicians working in countries with restrictive regulations in pharmaceutical advertising would have less exposure to media advertising results in less effect on their prescription pattern.

In emerging markets like Ethiopia, where doctors are considered as highly social-valued, influencing their prescribing behavior is the key for every pharmaceutical company. Pharmaceutical companies in Addis Ababa, Ethiopia, are directing all their marketing efforts towards doctors through different promotional strategies as they have the choice of the drug and the brands to prescribe. It is so obvious that physicians have the role of influencing their patients' pattern of selecting and administering drugs even the information about products and brands through commercial ads have been restricted to doctors and other healthcare professionals.

In this regard, several factors are considered by the pharmaceutical marketers to promote their products in front of physicians during the selection of a medication. In this study, it was found that except advertising, other promotional strategies such as public relations, sales promotions, sales personnel activities, and direct marketing influence the prescription behavior of a physician. That's why pharmaceutical promotion strategy influences the prescription behavior of a physician greatly.

Skillful detail of a product is necessary to promote a drug, especially for the newer molecule for the fact that new drug molecules are not really familiar to the physicians and needs some communication mechanisms to inform them. A perfect detailing of that drug can create the opportunity to make a space into physician's prescription (Eyosias, 2016). Moreover, this new information of existing product can be more accepted by a skillful detailing. Besides, gift with high value are always appreciated by the physicians even though unethical and illegal in some countries' legal context. Sales personnel are always tried to find out the hidden need of a physicians. If they find and solve it with proper item, then it would be a perfect gift to them and might contribute a lot in prescription. In medical institutes in Ethiopia (Eyosias, 2016), conference occurs in very frequent basis. Sponsoring such events are also an excellent way to get into the good list of a physicians.

Brand images of a drug or company image of pharmaceutical suppliers had a mediating role of enhancing or influencing physicians to prescribe a given drug brand. For instance, drugs imported from European countries are more expensive that those which came from India. Consumers in developing countries in particular exposed to quality stereotyping of Europian products. As a quiet simple equation, for instance in Ethiopia, there are more than 150 pharmaceutical companies with 2,000 brands and more (Eyosias, 2016). Despite their affordability, patients often insist their doctors to prescribe drugs with europran country of origin or insist pharmacists to give them European

brands. Thus, building a good brand reputation of a given drug brand through different promotional strategies would have the posibility to affect physicians to pick a specific brand amongsts others.

Thus, it can be concluded that implementing different communications strategy like financial incentive in the form of sponsorship, continuous medical education, free samples and related printed materials to the physicians by the sales and personal relation of the physician with the medical representatives are mostly considered as effective tools to influence physicians prescription behavior. brands despite the generic contents and their effectiveness are all the same.

5.3 Recommendations

The recommendation is heading for pharmaceutical marketer, sales representatives, and physician.

- Promotional mix elements had positive significant effect on physician prescription behavior. As the perception of physicians for different promotional mix tools, Pharmaceutical marketers should work on physician's attitude for pharmaceutical promotion and make them have strong and positive attitude by designing standardized, scientific, reliable, accurate, and ethical promotional activities.
- Even though physician is highly exposed to tempting pharmaceutical promotion strategies, they should consider the benefit of the pharmaceutical promotion as easily accessible, cheap, up-to-date, new information source without compromising their professional ethics.
- Public relations/ publicity, sales promotion and personal selling. This means, the competence of pharmaceutical suppliers' staffs substantially affects the physician prescription pattern. Suppliers should continually assess the attitude of the physician towards each of their promotional strategies and shape their sales representatives in line with the preference of physicians.
- Brand image of a drug has also a mediating effect on influencing physician prescription behavior through promotional mix elements. Thus, suppliers should select the effective promotional mix tool to promote the benefits along with their side-effects of a given drug brand to the targeted physicians without compromising their ethical integrity.
- Generally further studies are needed on practicing physician both in public and private setting. Physicians' relationships with the industry vary according to physicians' personal and professional characteristics.

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Appendices

Appendix – I Survey Questionnaire

ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF MARKETING MANAGEMENT

To Be Filled by Physicians

Dear Participant,

My name is Betselot Yimer and I am currently enrolled at St. Mary's University, School of Graduate Studies. I am conducting my thesis entitled "the effect of effect of promotional mix tools on Physicians' Prescription Behavior mediated by brand image" as a partial fulfillment of masters of marketing management. This study is done to shade lights on what mixes of promotional techniques are more effective to determine the prescription behavior of physicians for the maximum benefit of patients. And the mediating role of brand image of the medicine on the relationship between promotional mix and prescription behavior.

Please be honest in filling this questionnaire, as the results of this study can be used as a basis for further study. Your confidentiality will be protected and any information collected in this study will be granted with full confidentiality.

Many thanks for your kind cooperation in advance!!

Betselot Yimer

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Part I. General Information

Please put "x" mark on the box which you believe the most appropriate in representing your perception.

1. Gender ☐ Female ☐ Male

2. Age ☐ Below 30 years ☐ 30 - 60 years ☐ Above 60

3. Specialty ☐ Specialist ☐ Consultant ☐ General Practitioner

☐ Other, please specify_____

4. Specialty ☐ Specialist ☐ General Practitioner ☐ Consults

☐ Other, please specify_____

5. Years of practice ☐ Less than 5 years ☐ - 10 years ☐ More than 10 years

Part II. Questions related with Promotional Mix, Brand Image and Physician Prescription Behavior

Please read each statement carefully and show your level of agreement on the statements by putting "X" mark in the boxes using the following 5-scale Likert scales: Strongly agreed (SA)=5, Agreed (A)=4, Neutral (N)=3, Disagreed (DA)=2, and Strongly disagreed (SDA)=1

Promotional Mix Tools	**Likert Scale**				
1. Advertisement	**1**	**2**	**3**	**4**	**5**
Firms promote drugs through scientific journals encourage physician to prescribe drug					
Advertising on catch cover of free samples help physicians prescribe the drug					
Words on the packaging of gift items encourage physicians to prescribe the drug					
The constant information from awarded scientific journals and scientific publication					
2. Sales Promotion	**1**	**2**	**3**	**4**	**5**
Low-cost gifts (pen, paper weights, writing pads, etc. depicted drug brand) from pharmaceutical suppliers remind drug brand while prescribing					
Financial incentives, given that there are similar competitive medicines motivate physicians to					

prescribe					
The firm's interest to educate the physicians on new medicine through financing their participation to international scientific conference					
Add value incentives therefore office practice items, patient record forms, etc. given that there are competitive alternative medicines					
3. Direct Marketing	**1**	**2**	**3**	**4**	**5**
The brand advertisements direct to physician's post, telephone or email encourages prescription of a specific brand					
Physicians prefer to e-detailing than sales representative detailing to prescribe medicine					
Detailing from peer groups is helpful ion physician drug prescription choice					
The physicians' online real time support with information provided by the firm					
4. Personal Selling	**1**	**2**	**3**	**4**	**5**
Sales representatives provide accurate and up to date detailing regarding drug brand					
The detailers' scientific knowledge on the medicine encourages physician's prescription decision					
Frequency of sales representative's visit has an influence on prescription choice					
Sales representatives demonstrate free drug sample to persuade physician to prescribe medicine					
The physician – detailer interpersonal relationships motivate the physician to prescribe the medicine					
5. Publicity	**1**	**2**	**3**	**4**	**5**
Supplier's product launch meeting, lunch or dinner encourages physician prescribing drug brand					
Suppliers arranging clinical or scientific meetings on several special days					
Suppliers conducting a discussion by a specialist doctor is helpful to remind drug brands to					

prescribe					
Suppliers sponsor physician for conferences to influence them to prescribe their brands more					
6. Brand Image	1	2	3	4	5
Pharmaceutical supply “x” brand could be easily recognition.					
Pharmaceutical supplier “x” has a differentiated image from other suppliers.					
My familiarity with country of origin of a drug brand affects the way I look at Pharmaceutical supplier “x”					
I trust Pharmaceutical supplier “x” brand.					
I admire the other physicians who prescribe drug brand of drug supplier “x”.					
7. Physician Prescription Behavior	1	2	3	4	5
Initial perception (clinical observation) of the medicine matters most to me					
Detailing of the sales representatives has a role on my prescription behavior					
Sales promotion doesn’t encourage me to prescribe a medicine					
Advertisement of brands on scientific journals inspires my prescription behavior					
Financial sponsorship for training, conferences, and gatherings persuades me to prescribe a medicine					
Peer groups (colleagues, specialists, trainers…) influence my prescription behavior considerably					

Many Thanks for Your Valued Time!!

Appendix – II SPSS Output

Table -I. Model Summary

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error
1	. 889[a]	.790	.761	0.270

[a] Predictors. (Constant), Advertising, sales promotion, Direct Marketing, Personal Selling, Public Relations/ Publicity

b Dependent Variable: Prescription Behavior of Physician

Table -II. ANOVA Test

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.923	1	68.923	68.932	.000[b]
	Residual	103.027	131	.786		
	Total	171.950	132			

[a]Dependent Variable: Physician Prescription Behavior

[b] Predictors. (Constant), Advertising, Sales Promotion, Direct Marketing, Personal Selling, Public Relation

Table -III. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.909[a]	.826	.777	.270	.000

[a] Dependent Variable: Physician Prescription Behavior

[b] Predictors. (Constant), Advertising, Sales Promotion, Direct Marketing, Personal Selling, Public Relation

Table - IV. ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68.923	1	68.923	170.270	.000[b]
	Residual	53.027	131	.405		
	Total	121.95	132			

[a] *Dependent Variable: Physician Prescription Behavior*

[b] *Predictors. (Constant), Advertising, Sales Promotion, Direct Marketing, Personal Selling, Public Relation*

Table V. Regression Coefficients

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.406	.132		3.076	.000
	Promotional Mix	.669	.122	.669	5.484	.000
[a.] Dependent Variable: Physician Prescription Behavior						