The Effect of Pharmaceutical Companies' Promotional Tools on prescribing patterns of physicians in private hospitals of Addis Ababa

In partial fulfillment of the Requirements for the Degree of Master of

Business Administration

By: Biruk Tesfaye

Advisor: Dr Getie Andualem

July 2022

Addis Ababa, Ethiopia

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A SENIOR ESSAY SUBMITTED TO THE DEPARTMENT OF MANAGEMENT BUSINESS FACULTY ST. MARY'S UNIVERSITY

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE MASTERS OF BUSINESS ADMINISTRATION IN MANAGEMENT

BY

Biruk Tesfaye

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APPROVED BY THE COMMITTEE OF EXAMINERS

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DEPARTEMENT HEAD   **SIGNATURE**

_____   _____

ADVISOR   **SIGNATURE**

_____   _____

INTERNAL EXAMINER   **SIGNATURE**

_____   _____

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Declaration

I, Biruk Tesfaye, hereby declare that the thesis entitled The Impact of pharmaceuticals' promotional tools on Physicians' Prescribing pattern in private hospitals of Addis Ababa is my own original work and has not been submitted for any degree in any other University. It is offered for the award of the degree of Master of Business Administration in Management from St. Mary University.

Name: Biruk Tesfaye   Advisor Name: Dr. Getie Andualem

Signature: _____   Signature: _____

Statement of Certification

This is to certify that the thesis prepared by Biruk Tesfaye entitled: The Impact of pharmaceuticals' promotional tools on Physicians' Prescribing pattern in private hospitals of Addis Ababa and submitted in partial fulfillment of the requirements for the degree of Master of Business Administration compiles with the regulations of the university and meets the accepted standards with respect to originality and quality.

Approved by:

Internal Examiner_____ Signature _____Date_____

External Examiner_____ Signature _____Date_____

Advisor Dr. Getie Andualem_____ Signature _____Date_____

Acknowledgments

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List of acronyms

EFDA	Ethiopian food and drug administration authority
FFD	Face to face detailing
FDS	Free drug gifts
GIF	Gifts
SPO	Sponsoring
INV	Invitations
PPP	Physicians prescribing pattern
PR	Pharmaceuticals' representatives

Abstract

This study was conducted to assess how much is physicians in private hospitals of Addis Ababa are exposed to pharmaceutical's promotional tools, to determine whether these promotional tools affect prescribing patterns of physicians and analyze the relationship between the promotional tools and prescribing pattern of physicians. Thus it aims to bridge this gap in literature and knowledge. The study employs a descriptive research design and uses quantitative approach. A survey is conducted by using structured close ended questionnaires which is distributed to 269 doctors practicing in private hospitals of Addis Ababa. Descriptive, correlation and multiple regression statistical tools were deployed to examine the relationship between pharmaceutical marketing activities and physicians' prescribing pattern. The result of the research revealed that physicians working in private hospitals of Addis are exposed to the given promotional tools in various levels; face to face detailing being the one they are exposed to highly. At the same time the responses exposed that all the given promotional tools affect the influencer. The inferential statistics result revealed that face to face detailing and sponsoring of meetings and educational programs are best predictors of physicians prescribing behavior. As expected, there was a positive and significant relationship between promotional activities, such as face-to-face detailing, free drug samples, gifts, sponsoring, and invitations, and physicians' prescribing patterns. In conclusion the study found that face to face detailing is the highest exposure for physicians to pharmaceuticals' promotional activities, followed by gifts, free drug samples sponsoring and invitations. The correlation coefficient between dependent variable and independent variable is between 0.402 and 0.584, indicating a moderate to strong association. In regression analysis, 42.5% PPP is found to be due to promotional activities by pharmaceutical companies. This suggests a positive and significant relationship between promotional activities and physicians' prescribing behavior. Previous literatures have found that promotional activities by pharmaceuticals significantly impact physicians' prescribing pattern. This study also found that the highest impact is face to face detailing and the lowest is invitation, while the second, third and fourth influencers are sponsoring, gifts and free drug samples. Recommendation and future studies are forwarded.

Key words: face to face detailing, free drug gifts, gifts sponsoring, invitations, physicians prescribing pattern

CHAPTER ONE

1. Introduction

1.1. Background of the study

The World Health Organization defines pharmaceutical promotion as, "*all informational and persuasive activities by manufacturers and distributors, the effect of which is to induce the prescription, supply, purchase and/or use of medicinal drugs*" (WHO, 1988).These activities include advertisements, one-to-one sales visits, free samples, sponsorship of educational and scientific events that could affect treatment decisions, and a range of other activities. The term encompasses both direct and easily recognizable promotional activities and disguised promotion.

Manufacturers spend more money on promotion than on research and development (R&D). In the United States, which represents half of the global pharmaceutical market in terms of sales, the industry is estimated to have spent US $57.5 billion in 2004 on drug promotion, as compared with $31.5 billion on R&D. Around one quarter of sales revenues (24.4%) were spent on promotion, as compared with 13% on R&D. Spending on promotion also largely overshadows the resources allocated to independent medicines information. The UK devotes more public resources to drug information than many countries, but spending amounts to 0.3% of industry spending on promotion (Ferner, 2015)

Pharmaceutical manufacturers spend vast sums of money on promotion including sales representatives, samples, advertisements in broadcast and print media and sponsorship of educational events and conferences. In the United States alone over 25 billion dollar was spent in 2008 on promotion. In developing countries sales representatives are frequently the only source of drug information.

Medicines are core part of health care services and their use enormously grown in the last century with the advent of effective anti-biotic, anesthetics, painkillers, antiretroviral and others. They can cure diseases, relieve symptoms and prevent future illness. Appropriate medicine use means providing the right medicine at the right dose when it is needed and avoiding medicines which are unnecessary or unlikely to result in health benefits. It means choosing the treatment with the best

effectiveness and safety profiles among the available alternatives and the least costly of equivalent treatments.

These decisions require knowledge of a person's health condition, life situations, preferences and access to unbiased, comparative information of the benefits and harmful effects of the range of available treatment options. However; a tension exists between pressures to expand product sales within competitive markets and patient care.

The need of pharmaceuticals manufacturers to expand sales in the market is highly depend on the various promotional activities they perform and spend high amount of money. These promotional activities include Sales representatives, Free samples, Unmonitored promotion, Direct to consumer advertising, Sponsored meetings, Journal advertising E-promotion, mailings, post-market trials. In addition, in developing countries and transitional economies, where prescription-only status of medicines is often poorly enforced, gifts to pharmacists linked to achieving specific sales volumes are an important component of promotion.

There are compelling research evidences that promotion has a strong effect on prescribing and medicine use decisions, and that this influence is often underestimated. Physicians with greater reliance on promotion prescribe less appropriately, have higher prescribing volumes and are more likely to adopt new medicines, regardless of therapeutic benefit (Norris, 2015).

Currently there are more than 20 pharmaceutical and medical supplies manufacturers in Ethiopia most of which are being confined in the capital Addis Ababa. In addition the country imports huge amount of medicines from various countries. This implies that the pharmaceutical market is subjected to promotions of locally produced as well as imported medicines. Therefore, this research conducted to assess the impact of promotional activities on prescribing patterns of physicians in private hospitals of Addis Ababa.

1.2.   Statement of the problem

Researches made in various parts of the world suggest that doctors' attitude to promotion vary and do not necessarily match their behavior. Their opinions differ on the value of sales representatives, on whether they should be banned during medical training and on whether doctors are adequately trained to interact with them. Most doctors think information from pharmaceutical companies is biased but it is useful. Doctors who report relying on promotion tend to be older and more likely to

be general practitioners. Opinions about direct-to consumer advertising of prescription medicines are mixed. Most companies, the advertising industry and the media favor it while doctors generally opposed it. Consumers and patients are divided on the issue.

Still other researches indicated that doctors themselves often use promotion as a source of information about new medicines. Doctors in private practices and those who graduated long ago reported the highest use of such promotions as source of information depicting that promotions impact doctors' attitudes more than they realize.

Further studies showed that doctors who rely on promotions tend to prescribe less appropriately often and adopt new drugs very quickly. Studies also show that more promoted medicinal products are accessed to more drastic sales growth. Pharmaceutical funding for doctors such as research funding, increases request for medicines made by these companies to be added to hospital formalities. Direct – to consumers advertising (DTCA) is associated with increased requests from patients for advertised medicines. These facts indicated that the promotions also impact behaviors and decisions of physicians as well as patients.

According to a fact sheet by WHO, (2010) 50% of all medicines are not correctly prescribed. The situation is worse in developing countries, with less than 40% of patients in the public sector and less than 30% in the private sector being treated according to clinical guidelines. Promotional activities of medical representatives and other promotional activities by pharmaceutical companies, is identified as the major factor contribute to the incorrect use of medicines (The Lancet, 2010).

Ethiopia is one of the most populous countries in Africa and the demand for pharmaceutical products in the country is high (Kellon, 2011). The manufacturing of pharmaceutical is quite small and covers between 10 and 20% of the domestic market and the rest of the market are satisfied through imports (FMOH, 206). In 2015, the annual pharmaceutical market in Ethiopia was estimated at United States of America Dollar (US$) 400 to 500 Million and expected to reach around US$ 1 billion by 2018 (FMOH, 2019) According to Ethiopian food and drug administration (EFDA), regulation directive marketing of pharmaceutical products is restricted and a retailer or wholesaler cannot market prescription products or services directly to the end consumer (EFDA, 2011).

As pharmaceutical spending continues to escalate and drug safety issues have become more common, such physician-directed outreach efforts have come under mounting public scrutiny (Datta, 2017). Pharmaceutical firms, therefore, need to design their marketing mixes strategies without affecting the ethical code of practice. They need to understand how their promotional activities influence the doctors' choice of prescription drugs. So far limited research had been conducted in the area.

Mengistu Tadesse (2011) studied the impact of pharmaceutical promotions in private and public hospitals of Addis Ababa. Birhanu Demeke & Mehari G/Giorgis (2016) studied the influence of pharmaceuticals' promotion on physicians working in hospitals of Mekelle. Abel Demirew & Mesfin Haile (2020) studied the influence of marketing mix of pharmaceuticals on physicians prescribing behavior of Ethiopian doctors.

All these previous researches were made either in different geographic location or considering both public and private hospitals. However since most of the private hospitals have business to business relationships with the pharmaceuticals and even some owners of hospitals also involve in the pharmaceuticals production firms in one way or another. Thus the researcher believed that physicians in the private hospitals are more exposed to pharmaceutical promotions. Therefore, the objective of this study was to assess the perceived influence of pharmaceutical promotional tools on physicians' prescribing pattern in private hospitals of Addis Ababa, Ethiopia.

1.3. Research questions

The research is conducted to answer the following research questions.

- To which of pharmaceutical industry's promotional activities physicians in private hospitals are more exposed?
- Which promotional initiatives have impacts on prescribing pattern of private hospitals physicians'?

- What impact does each promotion element have on physicians' prescribing decisions?

1.4. Research objective

1.4.1. General objective

The general objective of the study was analyzing the impact of promotional activities by pharmaceuticals on the prescription pattern of physicians in private hospitals of Addis Ababa.

1.4.2. Specific objectives

The specific objectives of the study were

- To assess to which promotional activity of pharmaceuticals the private hospital physicians are exposed
- To determine which promotional initiatives have an impact on the physicians' prescribing patterns
- To analyze to what extent each factor impacts the physicians' prescribing pattern

1.5. Scope of the study

Geographically, the study focuses on physicians working in private hospitals in Addis Ababa, Ethiopia. Theoretically, the study is limited to the investigation of the impact of pharmaceuticals promotional activities on the prescribing patterns of physicians working in private hospitals of Addis Ababa. Since in the Ethiopian context, only the physicians are subject to pharmaceutical promotion for prescription drugs, the study doesn't consider or analyze the satisfaction of consumers or patients towards generic and brand medicines. In terms of time scope, the study focuses on one-year experience of physicians (to let respondents easily remember) regarding their experience of pharmaceutical promotion and the impact on their prescribing pattern. The scope methodologically was limited to the survey method using closed ended data collecting questionnaire.

1.6. Significance of the study

The significance of the study are

- For physicians and regulatory bodies, the study helps to understand the current pharmaceutical promotional practices influencing the attitude and practice of physicians and give direction to enhance professional and objective way of medicine prescription.
- For final consumers/patients and for the Ethiopian economy, the study can give directions and recommendations to physicians and health regulatory bodies to make medical treatments accessible and affordable through the prescription.
- To the pharmaceuticals the study can show how prescription of expensive medicines affects patients who can't afford and direct to logically promoting their products.

- The findings of this study can give directions to conduct further research in the area of ethical medical prescription, on the economic impact of brand medicine prescription on patients and on national economy so as to develop best practices.

No doubt that the research gave great experience for the researcher regarding research methodology and future problem solving activities

1.7. Definition of key terms

Drug (pharmaceutical):- any substance or mixture of substances or medical equipment or supplies used for human and animal health care to diagnose, treat, mitigation or prevention of diseases or symptoms including poison, narcotics and psychotropic substances, chemicals, blood and blood products, household and industry pesticides, medicated food stuffs and animal food additives (FMCHA, 2014).

Pharmaceutical promotions: activities of pharmaceutical companies through face to face detailing, distribution of drug samples, giving gifts for physicians, sponsoring and inviting professionals.

Face to face detailing applies to medical representatives actions to make any contact with medical staff to induce the prescription, supply, purchase and use of drugs.

Gifts: - gifts from medical representatives who can be as innocuous pens, note pads, medication samples, meals or substantial as travel, cash and research support.

Drug samples:- Prescriptions and non- prescription medications which are provided to sites by medical representatives for complementary distribution to patients as starter doses.

1.8. Organization of the study

This study is organized in five chapters. The first chapter introduces the issue and includes the background, the problem statement, the research objectives and questions, significance and scope of the study. The second chapter holds the literature reviews which are composed of the conceptual, theoretical and empirical reviews. The third chapter encloses the research methodology including design, approach, source and type of data, method of data collection as well as the method of data analysis. The fourth chapter presented the data and discussion of the results. The last chapter provided the summary, conclusion and recommendation based on the results discussed on the fourth chapter.

2. Literature Review

This chapter presents the conceptual, theoretical and empirical reviews of the study scenario as well as the research gap and conceptual framework of the research.

2.1. Conceptual literatures

2.1.1. Pharmaceutical promotions

The World Health Organization defines pharmaceutical promotion as, "*all informational and persuasive activities by manufacturers and distributors, the effect of which is to induce the prescription, supply, purchase and/or use of medicinal drugs*" (WHO,1988).These activities include advertisements, one-to-one sales visits, free samples, sponsorship of educational and scientific events that could affect treatment decisions, and a range of other activities. The term encompasses both direct and easily recognizable promotional activities and disguised promotion.

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In Ethiopia, 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.
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.

More than 105 pharmaceutical sales representatives representing around 21 manufacturers are practicing in Ethiopia. However, the impact of drug representatives and other promotional activities on doctors' prescription decision and hence in rational drug use is not yet studied. Studies in this area are crucial in developing ethical criteria for drug promotion and enforce regulations to make the ethical criteria effective by Food, Medicine and Health Care Administration and Control Authority of Ethiopia of Ethiopia to control drug promotional activities. This study is therefore to determine the impact of drug promotional activities of pharmaceutical companies on the decision-making process of drug prescription ordered by doctors working in Addis Ababa.

2.1.2. Reasons for Intense Pharmaceutical Promotions

A fundamental contradiction exists at the heart of the pharmaceutical marketplace. When a new medicine is approved for marketing the manufacturer does not need to show that it is any better – any more effective or safer – than existing alternatives. However, each new medicine also needs to generate sales so manufacturers can recoup drug development costs and provide a return on investment for shareholders. The solution: market your new medicine aggressively, especially if it really is no better than cheaper, established alternatives.

Many people, including health professionals, are surprised to hear that most newly approved medicines have not been shown to be any better than existing treatments, given the extensive research that companies need to carry out to obtain market approval.

Medicines are usually tested against a placebo, an inert substance also referred to as a 'sugar pill'. Manufacturers must show that the new medicine has the intended effect to a sufficient extent to satisfy regulators. If it is unethical to use a placebo, for example when a medicine is used to treat a life-threatening condition for which effective treatments exist, the manufacturer must show that the new treatment is no worse than existing treatments, through 'non-inferiority' trials. Figure 1 describes the results of 10 years' worth of evaluation of new medicines by a French independent drug bulletin, *La Revue Prescrire*.

Most are 'me-too' products with little to no evidence of advantage over existing alternatives Companies need to recoup the costs of developing and bringing each new medicine to market, even if it is the 13 new 'me-too' anti-inflammatory drug or the 6 new antidepressant affecting serotonin uptake. Promotional activities aim to convince physicians and other health professionals to buy medicines and patients to buy them.

Most promotion focuses on relatively new, patented medicines both because these products are higher priced and because patent protection ensures a monopoly on sales.

2.1.3. Techniques of pharmaceutical promotions

Pharmaceuticals approach physicians in various ways to promote their products. Of these various techniques they use the following are the most common.

Sales representatives: - Doctors in practice often rely on pharmaceutical sales representatives to provide them with information about existing and new pharmaceutical products. 12,13

These representatives are not clinicians, but have been trained, sometimes inadequately, to provide information about new drugs and to promote pharmaceutical products. Although pharmaceutical sales representatives serve an educational function, they are employed by large for-profit corporations. Visits by pharmaceutical sales representatives may lead to increased utilization of specific pharmaceutical products, and doctors are influenced by commercial information disseminated at such visits, sometimes unknowingly (Evans, 2014).

Studies from several countries show that roughly 80-95% of physicians interact with pharmaceutical representatives even though the evidence shows the information they provide is skewed (even slightly) in favor of the drug being promoted, resulting in inappropriate prescribing habits (Ferner, 2015 & Gagnon, 2018). Industry interactions correlate with doctors' preferences for new products that hold no demonstrated advantage over existing ones, a decrease in the prescribing of generics, and a rise in both prescription expenditures and irrational and incautious prescribing (Semin, 2013).

Reviews of information presented by pharmaceutical sales representatives have noted that pharmacologic information is often inaccurate. In Britain, Canada, New Zealand, and the United States 80-90% of doctors see pharmaceutical representatives. Of statements made by pharmaceutical representatives 11% are false and of the false statements all are in favor of the representatives' drugs. While very few doctors consider themselves susceptible to detailing, 84% of them believed that their colleagues are (Strukenborn, 2014).

Meetings with representatives (face to face detailing): - Studies found that there is an association between meetings with pharmaceutical representatives and formulary addition requests for the drug of the representative's company, both with respect to control doctors who did not meet

representatives and with respect to requests for other companies' drugs. Most of the requested drugs presented little or no therapeutic advantage over existing formulary drugs. 7, 8 Interactions with pharmaceutical representatives were also found to impact the prescribing practice of residents and doctors in terms of prescribing cost, non-rational prescribing, awareness, preference and rapid prescribing of new drugs, and decreased prescribing of generic drugs (Kravits, 2016 & Woolhandler, 2017).

Gifts: - Gifts from the Pharmaceutical Sales Representatives can be as innocuous as pens, note pads, medication samples, and fast food, or as substantial as travel, cash honoraria, and research support. Irrespective of the content, gifting is ubiquitous. A survey noted that 92% of doctors had received free drug samples, 61% had received meals, and free access to entertainment, sporting events or travel, and nearly one in seven had received financial benefits (Noris, 2015).

Social science research continues to show that the impulse to reciprocate from even a token gift can be a powerful influence on behavior, thereby producing a possible conflict of interest for the recipient professional interest and self-financial concern. This becomes evident when pharmaceutical companies persuade doctors to write prescriptions, an act not only with financial and health squeal for the patient, but with possible financial consequences for the doctor. A classic study has shown that most doctors however, they believe the same is true for only 16% of their colleagues. Medical students acknowledge gifts as more difficult ethically for professions other than their own. Such findings echo social science research, demonstrating that, although bias is identifiable, it tends to be preferentially attributed to others (Steinman, 2013, & Spielman, 2011).

It is difficult to believe that a doctor is impervious to industry incentives and that accepting gifts does not influence their behavior on some level. Physicians tended to believe that it was appropriate to receive inexpensive gifts. There is no such thing as a "free" lunch: accepting gifts from pharmaceutical companies allows for a potential conflict of interest between the doctor and patient, which in some cases may be unethical. A study showed association between benefiting from sponsored meals and formulary addition requests for any drug and it was clearly dose- related (Waxman, 2012).

Free drug samples: - Another role that pharmaceutical promotion often plays is providing drug samples to doctors. Of the total money spent on drug promotion in the US in 2004, roughly 30% has

been attributed to samples. This is only second to detailing, which comprises 36% of all promotional spending. Pharmaceutical companies expect to get a return on this investment. Studies showed that samples do influence prescribing behavior. When samples run out, a prescription is usually written for the sampled drug. 31, 32 Studies showed that often samples never reach their intended audience. Many samples are appropriated by doctors for personal or family use or end up in an ''unknown destination'' (Wilson, 2017).

In a study it was found that accepting funding to attend a symposium was independently associated with increased formulary addition requests for the sponsor's drug. This interaction was also found to impact hospital prescribing practices two years after groups of doctors accepted all-expenses-paid trips to a drug-sponsored symposium (Bergman, 2016).

Inviting physicians: - Two studies revealed that resident exposure to pharmaceutical representative speakers at lunch rounds was associated with dissemination and learning of inaccurate information about the sponsor's and competitor's drug. In these studies, attendance at rounds given by a doctor pharmaceutical representative was associated with appropriate and inappropriate treatment decisions by attending residents, independent of variables including the resident's memory of the presenter's affiliation. 44, 45

Sponsoring physicians' education: - One marketing approach used by many pharmaceutical companies is to provide financial support of continuing medical education 46,47 Doctors attend CME programs for many reasons, including fulfilling state medical licensure requirements, maintaining hospital privileges and specialty society memberships, and obtaining new knowledge and skills. Many doctors also regard CME courses as their most valuable source for clinical information. 48 suggests that CME programs sponsored by industry not only may be more biased sponsoring companies' products influence doctors' professional behavior medication) participate in CME programs (Bergman, 2017, Campden, 2015, Ferner, 2015).

Generally although some positive outcomes were identified complicated illnesses These included an impact on knowledge attitude rapid prescription of a new drug) rarely held important advantages over existing ones; non-rational prescribing behavior; increasing prescription rate; prescribing fewer generic but more expensive, newer medications at no demonstrated advantage.

2.1.4. Pharmaceutical promotions and potential harms

From a public health perspective, a tension exists between a manufacturer's need to rapidly stimulate sales to recoup investment costs, and the limited knowledge of rare and longer term harmful effects of new medicines. Most drug safety withdrawals and new post-market warnings of serious risks occur in the first few years that a medicine is on the market. With intense promotion and rapid widespread stimulation of sales, hundreds of thousands if not millions of patients may be exposed to a new medicine soon after it is marketed. Any potential harm becomes more widespread than with more cautious gradual introduction (Lasser, 2012).

Because of the potential for harm from unnecessary or inappropriate medicine use, drug promotion is subject to a greater degree of regulation than other forms of advertising. When a medicine is approved for marketing, it is accompanied by approved product information specifying the product's characteristics and conditions of use, the condition or conditions it is intended to treat, appropriate patient population, dose and administration schedule, warnings and contraindications, and observed beneficial and harmful effects. Regulations governing drug promotion generally require consistency with approved product information. However, enforcement is often poor, with few public resources devoted to the task, little to no active monitoring, and extensive reliance on industry self-regulation.

The potential harm to patients from inaccurate promotional information was highlighted during US Congressional hearings concerning the arthritis drug Vioxx (rofecoxib). In 2011, a US Food and Drug Agency (FDA) advisory committee recommended that physicians be warned of evidence of cardiovascular risks. The next day, an internal Merck memo to sales staff advised them to avoid discussing these risks (Waxman, 2005). This was one year into rofecoxib's five years on the market. In those five years, it is estimated to have caused 88,000 to 140,000 heart attacks in the US (Graham, 2015). Another source of harm is through ineffective care if unapproved uses are promoted that fail to be backed by scientific evidence, as occurred with the anti-epileptic drug, Neurontin (gabapentin) (Steinman et al., 2014). These are isolated examples, but they highlight the serious potential for harm from incomplete and inaccurate medicines' information.

2.1.5. Regulating pharmaceutical promotions

Laws governing pharmaceutical advertising and other forms of promotion are usually included in broader national pharmaceutical legislation. In practice, however, many countries delegate most

regulatory oversight to industry self-regulatory bodies or to multi stakeholder organizations that may also include health professional associations and other non-governmental organizations. There is little active monitoring of promotional practices, and few fines or other sanctions levied for promotional violations in many countries. Although the aim of regulation of drug promotion is protection of public health, few public health agencies have direct involvement (Grham, 2015).

Drug promotion has a strong effect on costs of medicines through increased volume of use and through stimulation of use of the newest, most expensive products. In most cases, public payers have little to no involvement in the regulation of drug promotion. An exception is in France where the agency that determines drug prices and reimbursement conditions, the "Haute Autorite de la Sante (HAS)", is implicated in regulation of the activities of pharmaceutical sales representatives and can in principle reduce the allowable price of over promoted products (Le ministère en charge de la santé, n.d.). In the U.S., health reform legislation introduced in 2010 included a provision requiring drug companies to publish annual reports of all payments to individual doctors (Grham, 2015).

Many lower income countries have few resources to devote to medicines regulation in general, including the regulation of drug promotion. In practice little to no regulation occurs. Wealthier countries have adequate resources in principle but often drug promotion is viewed as a low priority regulatory activity, with little to no staffing in comparison with pre-approval drug review (Minitez, 2013).

At an international level, the WHO Ethical Criteria (see Box 1, below) provide an international standard that may be applied by governments, industry, media and health professional and consumer groups. Developed in 1988, the criteria are not legally binding; the aim is to provide a standard that national governments, professional societies, industry and others can use and adapt. These criteria are applicable in both developing and industrialized countries but have not been widely implemented.

One example of an international ethical standard for drug promotion is the 1988 WHO criteria having the following key terms.

- All claims concerning medicines should be reliable, accurate, truthful, informative, balanced, up-to-date, capable of substantiation and in good taste;

- Promotion should not contain misleading or unverifiable statements or omissions likely to induce medically unjustifiable drug use or to give rise to undue risks

- The word 'safe' should only be used if it is properly qualified;

- Promotional material should not be designed so as to disguise its real nature;

- Financial or material benefits should not be offered to health professionals to influence prescriptions;

- Scientific and educational activities should not be deliberately used for promotional purposes. (WHO 1988)

2.2. Theoretical literature reviews

To date, research on decision-making by physicians lacks sound theoretical foundations. Most of the current research on prescribing behavior takes the exploratory approach to explain or interpret the decision-making process by physicians rather than a theoretical one. Thus, there is the need for an inclusive research entrenched in a sound theoretical basis. A few theoretical models have been employed in the prescription research, and they include attitude-behavior models like Reasoned Action Theory and the Planned Behavior Theory (Heminiki, 2011 and Miles, 2013).

 A key proposition of these theories is that individuals are rational in decision-making, and therefore cognitive approach can be utilized to explain behavior. A physician's decision-making process is an aspect of prescribing that has been addressed by cognitive models. However, Godin (2012) reported that the theory of TPB has some drawbacks, i.e., the model does not take the emotional approach into consideration. Lee (2011) and Conner (2013)   suggested the incorporation of emotional variables as a valuable approach to modifying the behavioral theories.

The prescribing decision is a complex process that involves a number of factors. In many cases, the decisions of physicians' are multifactorial. Physicians may adopt several strategies when making prescribing decisions, and several kinds of critical heuristics in conducting their duties of patient treatment. Despite the several opinions on physicians' decision-making in literature, none of the theories can solely explain the drug prescription decision of physicians and its related factors. Consequently, complex theories have been used to understand how several factors influence physician decision-making in general practice (Pavlakis, 2014).

A review of the existing literature showed that there is no consensus among researchers relating the use of theories in exploring physicians' prescribing behavior and its determining factors. Some

studies have attributed inappropriate prescriptions to the behavior of physicians 17-19   and factors related to their decision making (Allen, 2012). These factors include marketing efforts of pharmaceutical firms and patient characteristics (requests and expectations). Kotwani (2010) and Mang (2014) added that the poor collaboration between physicians and pharmacists has been recognized as a significant factor responsible for an inappropriate prescription. Nevertheless, the understanding of these factors and optimal approaches needed to improve the prescribing behavior of physicians is incomplete. The following theories are some of the theories considered relevant to the subject so far.

2.2.1. Agency theory

The basic concept of agency theory was first established by Jensen and Meckling (1976)   in academic literature, by introducing the initial perspective of different objectives for the theory. Eisenhardt (1989) reviewed the concept, context, and principles of the Agency Theory. The theory presents a framework for analyzing relationships between interdependent to identify the problem that exists between parties and mechanism to solve it. The agency relationship occurs when the first party (the principal) relies on the second party (the agent) to perform certain actions on behalf of the client (Molt, 1998).

Within the context of this review, the focus is really on two critical agency relationships, that of the physician (agent) and patient (principal), and the pharmaceutical firm (principal) and physician (agent). In the first relationship, the pharmaceutical firms as principal obviously depend on the doctor as the agent to select the drugs they are offered in the market. The patient, in their role as principal, depends on the physician, acting as the agent, to select the appropriate drug. Physicians make decisions of prescribing drugs on behalf of their patients. The principal might be concerned that the agent may not take actions that are in the best interest of the principal. Although these may be the two primary relationships considered in this research, it should be noted that interventions of pharmacists may also influence the physician prescribing of drugs, however this maybe a second agency relationship (Molt, 1998).

Based on the agency theory updated by Molt, 1998 to the pharmaceutical firm, the pharmaceutical firm (principal)

i.   It is motivated to sell its products (adapting various marketing efforts) and generate a profit,

ii.   While full disclosure is required, the firm typically emphasizes only a limited amount of the available information related to both the sale of that product to the physician and its safe use,

iii.   It believes in its products (drugs), and being at arm's length from the patient: physician relationship, is assuming less risk and

iv.   Its success is often influenced by environmental factors over which it may have little control (within the context of this research i.e. habit persistence and drug cost/benefit ratio).

2.2.2.   Theory of persuasion

Persuasion has an effect on everyone on a regular basis, by controlling decision making or a successful attempt to convince or influence. The persuasion is also defined as a human communication intended to manipulate others by altering their philosophies, principles or points of view. Persuasion comprises both emotional and cognition responses to the condition in which people find their selves. Persuasion is an interaction between cognition and emotion that may alter the behavior of an individual towards the objective (Schommer, 2015).

Theoretically, persuasion has four key dimensions:

i.   Sender of information (e.g., representatives of drug companies),

ii.   The receiver (e.g., a doctor),

iii.   The exchange between the sender and receiver, either interactive or active,

iv.   The modification in behavior (e.g., prescription behavior), which can be elective, and there is a certain amount of time required for the deal to occur.

Persuasion stipulates that behavior of individuals' changes willingly when they are subjected to a particular stimulus, and thus the mind alters the interaction. In most cases, this alteration of mind is related to the singular needs of individuals (physicians) and their desires (e.g., prescriptions needed by their patients) such changes could be achieved instantaneously (prescribing decision), or it may take several days or months or even years (need more conviction) (Schommer, 2015).

Persuasion theory is used in prescription literature to identify better ways of providing interventions to enhance the prescribing behavior of physicians such as marketing activities. The theory provides a significant amount of knowledge to solve the questions relevant to pharmaceutical marketing issues in the context of drug prescription (Groves, 2016).

2.2.3. The buyer behavior – stimulus-response theory

The model of the buyer behavior stimulus - response (S-R) is similar to the ELM model because both models need emotion and awareness to convince the individual. This model can be related to the black box theory of the school of behaviorism where the emphasis is not on the processes the consumer undertakes but the relationship between the stimuli and the resulting response (Othaman, 2015).

The original information deduced from this model is the process of the buyer's (physician) consciousness from external stimuli to the purchase (prescribing) decision. As a consumer, a doctor is confronted with several of the same influences that an individual might face with a typical purchase decision. The model proposes that the stimulus combined with a proper adjustment and specific population will result in a response that can be anticipated by the vendor. The marketing mix factors and other stimuli enter the "black box" which is known as the client (i.e. the physician) and generate some choice replies/purchases. All of these stimuli enter the black box of the buyer and are converted into a range of observed responses of the purchaser (Othaman, 2015).

On the other hand, a vendor wants to absorb how stimuli are translated into replies within the black box of the consumer, which consists of two parts. Firstly, the buyer (physician) properties will affect how stimuli are absorbed, visualized and interpreted by the marketing motivators. The characteristics of the purchaser (doctor) can be attributed to private variables such as social and psychological factors. Secondly, the decision-making process of the buyer (physician) will ultimately define what, if any, buy (prescriptions) (Grimshaw, 2014).

Pharmaceutical companies offer their products to doctors for the purpose of increasing sales in the market as well as promoting sales revenue. Thus, the goal of marketing activities for pharmaceutical companies, such as drug information, free drug samples, and other promotional tools is to stimulate behavioral change in doctors as regards drug prescription. Furthermore, marketing strategies related to product, place, promotion and price are considered tools for motivating the physicians to prescribe specific brands. For instance; expensive dinners to physicians along with an educational program in relation to a new drug, or an innovative use of a drug already on the market can be used as motivating the physicians to prescribe the medicines the pharmaceuticals produce. These incentives will likely motivate physicians to prescribe more of the pharmaceutical firm's product discussed at the dinner or program (Russel, 2012).

2.2.4. Theory of planned behavior

There are some mid -level theories from social and behavioral science that may aid the understanding of prescribing behavior. The TPB theory is one of the most appropriate and frequently considered behavioral theories when attempting to modify or influence physician prescribing. In the meta-analysis conducted by Godin (201 8) the TBP demonstrated high ability to predict the behavior of physicians within the context of health care. TBP has proved to be a successful analytical tool to handle the factors influencing prescribing behavior (Kramer, 2014).

This review is based on a model of TPB which elucidates and tests the ability of attitude, personal norm and perceived behavioral control to predict behavioral intentions and physicians' prescribing behavior. Attitude expresses the degree of like or dislike for something, which may affect the "tendency or behavior" to act in specific ways. To be precise, attitude is the extent to which a physician has a favorable or unfavorable attitude towards marketing efforts will influence their prescribing. The attitude of medical practitioners towards the marketing efforts of pharmaceutical companies will determine their prescribing behavior. Attitude can be measured as the degree at physicians approve of four factors, specifically, available drug information, drug brand, sales promotion, and effectiveness of MRs (Perkins, 2014).

A second element within the context of the TPB is a function of the influence of subjective norms (SN), namely, the expectation (pressure) to perform according to some group. In this review, this can manifest by social influence (perception of pressure resulting from patient or pharmacist) such as patient demands for drugs, patient expectations, pharmacist expert power and pharmacist physician collaboration (Perkins, 2014).

The third element within the context of the theory of planned behavior, consider perceived behavioral control (PBC), which is a function of conduct, as it reflects experience (product knowledge) while anticipating future problems. PBC signifies a physician's perception of the extent to which performance of the behavior is easy or difficult. PBC is attributed to the existence the variables that may facilitate or hinder the change of the behavior (e.g., prescribing) (Perkins, 2014).

These factors could be contextual, such as drug characteristics, cost/benefit ratio of a drug, habit persistence of physicians and trustworthiness of physicians in pharmacists (i.e., the responsiveness

of physicians' decision making to marketing efforts, patient characteristics and pharmacist factors), thus affecting the prescribing decision of physicians. Thus, this review seeks

to extend the model of TBP by including contextual variables as moderators and investigating its influence on the relationship between marketing efforts, patient characteristics, pharmacist factors, and the prescribing decisions of physicians (Kramer, 2014).

2.2.5. Theory of social power

In the context of health care, cooperation and two-way communication between team members are likely to be affected by the social power of the members. The theory of social power is applied to better understand the role of the expertise of pharmacists in prescribing drugs. Power is defined as the possibility of influence. Social power is defined as the ability of a person/ individual or group of individuals to alter the outlook or behavior of someone else or panel in conformity with the course anticipated by the persuasion. Social sources of power conveyed by the ability of the person to affect others which play implied or otherwise role in the team's interactions or through team members that provide health care (MCCaffrey, 2015).

The theory of social power encompasses two vital elements of power and influence attempts. First, according to control relational theory, during the pharmacist-physician interaction in prescription decisions, the potential of pharmacists' perception to influence physicians will likely lead them to exert power in different tactical forms (by providing information, advice, and recommendations related to drug prescriptions). However, it remains unclear how these mechanisms are applied. Therefore, this review will contend that the expertise of pharmacists influences physician prescribing. Secondly, this review presents trustworthiness as a modulating variable in the relationship between the expert power of pharmacists and pharmacist– physician collaboration, and physician's behavior (MCCaffrey, 2015).

2.3. Empirical reviews

Ravindra (2013) studied the impact of pharmaceutical promotions in India. His findings indicated that although the doctors have the sole and absolute power to determine the sales of drugs, which are available on prescriptions, the pharmaceutical marketing and promotion practices are blamed for irrational prescribing habits and their consequences. In a study of large number of prescriptions, found that the nutritional supplements were advised in antibiotics in and analgesics. There are many examples of misuse of potent drugs like antibiotics found out by the study.

May Alowi & Yusuf Kani (2018) made in Nairobi their selected studies reveal an overall consensus that marketing efforts influence physician prescribing. Marketing efforts may have both an advisory role (e.g., reducing cognitive uncertainty) and an influential role (e.g., inducing positive effect). However, the link between marketing efforts and the prescription behavior remains uncertain.

Mengistu Tadesse (2011) studied the impact of pharmaceutical promotions in private and public hospitals of Addis Ababa. His findings indicated that Socio-demographic characteristics of doctors' were not found to be related factors that affect their prescribing behaviors by drug promotion activities. The extent of exposure to promotional activities was found to be higher among doctors who reported affected by drug promotion source of drug information were reported their prescribing behavior highly affected.

Birhanu Demeke & Mehari G/Giorgis (2016) studied the influence of pharmaceuticals' promotion on physicians working in hospitals of Mekelle, Ethiopia. Approaching ninety physicians this study, 40 (48.2%) of the physicians believed that their prescribing decisions were influenced by visits of medical representatives (MRs). The odds of physicians who received gifts from MRs being influenced to prescribe their respective products was six times higher than those who reported not accepting any gifts. Stationery materials and drug samples were the commonest kinds of gifts given to physicians and face to face talking was the most frequent promotional methods. The finding of this study showed that around thirty-nine percent of MRs have had negative attitude toward competitors' product.

Berket Tigabu (2018) made on the factors affecting physicians' prescription behavior his findings showed that many factors can influence the prescribing decisions of physicians. These factors can be used in policy development to enhance the prescribing decision of prescribers. Factors may or may not give chance for change. Further in his findings he showed that demographic characteristics and socioeconomic factors give a little room for improvement. However, factors like knowledge, educational level, experience, the number of practicing professionals, cost sharing and guidelines can be modified to influence prescribing behavior. This study is performed on the general conditions without any consideration to promotional activities of pharmaceuticals.

Abel Demirew & Mesfin Haile (2020) studied the influence of marketing mix of pharmaceuticals on physicians prescribing behavior of Ethiopian doctors. Their findings indicated that the overall

perceived influence of pharmaceutical marketing mix strategies in physicians' prescribing behavior was 55.9%. The influence of promotion, product, place and price strategy perceived by physicians in their prescribing behavior was 83 (61%), 71(52.2%), 71 (52.2%), 80 (58.8%) respectively. There was a statistically significant difference among marketing mix strategies ($\beta = 0.08$, $p = < 0.001$). Determinants on the influence of physicians' prescribing behavior were specialty ($p = 0.01$) and working areas ($p = 0.04$). The qualitative design also generates additional insights into the influence of pharmaceutical marketing mix strategies on physician prescribing behavior.

2.4. Research gap

Many researches had been made all over the world concerning the relationship between the promotional activities of pharmaceuticals and prescribing pattern of physicians. Among the researches made in Ethiopia assessed by the researcher, the latest was made in 2020 but the research is made on hospitals all over Ethiopia and targeted both public and private hospitals. As the level of exposure of physicians in public and private hospitals differs, this research is intended to be performed targeting only private hospitals and geographically covering Addis Ababa where most of the private hospitals are situated.

Considering Berekt Tigabu's (2018) research, its focus was on all factors affecting physicians prescribing pattern while this research is intended to focus only the impacts of promotional activities on prescribing patterns of physicians. Furthermore Birhanu Demeke (2016) researched in Mekelle having a geographic gap with this research.

In general there are very few researches performed in this area in Ethiopia and most of these researches are made before 2013 showing a time gap and considered both public and private hospitals. This research will fill this time gap being currently made and will cover private hospitals of Addis Ababa. This is because physicians in private hospitals are exposed to pharmaceuticals' promotions in two ways: one through direct contact made with the promotions and two through an influence by the hospitals who usually establish business relationships with pharmaceuticals.

2.5.   Conceptual framework of the study
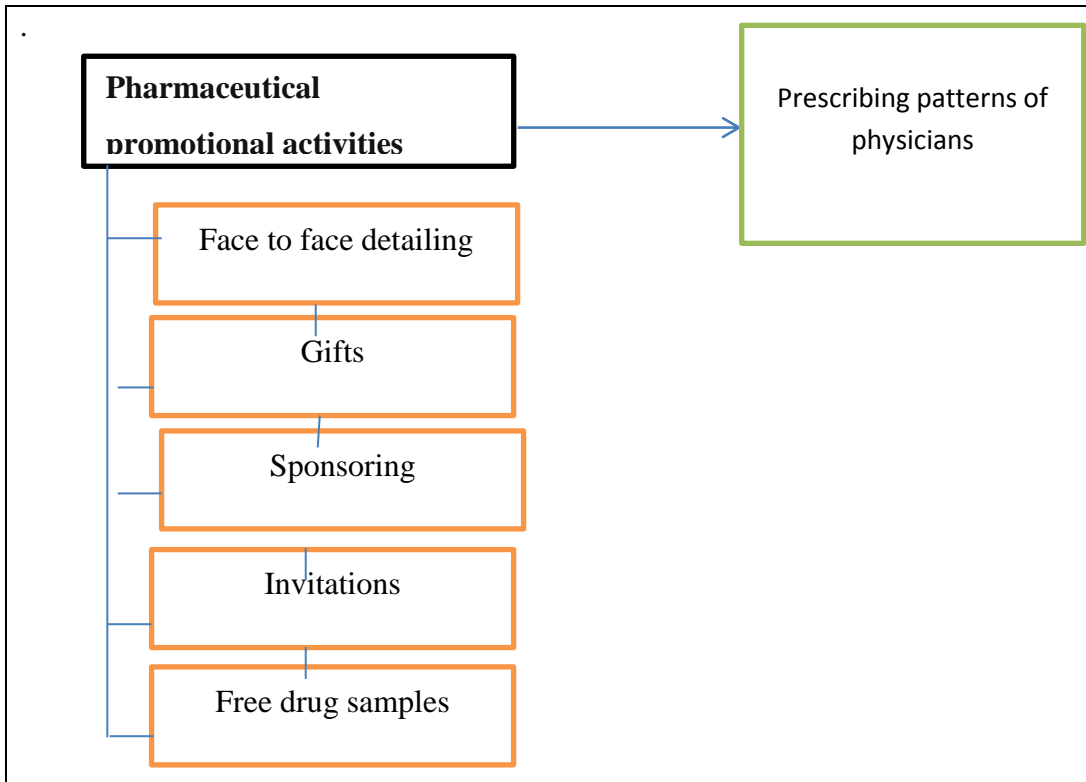
Fig 2. Conceptual framework of the study

Source: Adapted from Sriwignaraja and Fernando (2015) and available literature

3. Research Methodology

3.1. Introduction

This chapter discusses the research design and methodology in detail so as to have a clear picture on the processes and techniques that were used upon conducting the study. The research design shows the general plan how the research questions were answered. It also give information about how the population is selected and sample taken. It further explains how the data was analyzed.

3.2. Research design

The research design is a framework for planning the research and answering research questions. It can be understood as the plan of what data to gather, from whom, how and when to collect the data, and how to analyze the data obtained. It is a systematic plan or structured framework of how one intends to conduct the research process in order to solve the research problem.

Since the study was conducted to assess the effect of promotional activities of pharmaceuticals on prescribing pattern of physicians a descriptive study design with inferential analysis was deployed so that the relationships between independent and dependent variables can statistically be determined.

3.3. Research approach

The research deployed descriptive design by which data is statistically analyzed predominantly based on the primary data collected and weighing in light of secondary data collected from literatures. As such the research approach used for this study was quantitative approach.

3.4. Target population, sampling method and sample size

3.4.1. Target population

The target population for the study was physicians practicing in private hospitals of Addis Ababa. In this study, the population from which a sample is drawn consists of both male and female doctors who are currently working irrespective of their age. The physicians can be general practitioners or specialists irrespective of their work experience or earning history whereas doctors who are retired or those working on administrative positions were excluded.

3.4.2. Sampling Method

The sampling method that is used for this study is convenience sampling so that scheduled visits to the respective private hospitals are made to contact the physicians available at the time of visit. This method is selected because it will be difficult to contact selected physicians for the purpose. As private hospitals in Addis Ababa were considered and samples were taken from all proportionating the number of physicians in the hospitals to the sample size.

3.4.3. Sample size

According to FMHACA information there are 980 physicians practicing in private hospitals of Addis Ababa. Using this target population the sample size is calculated by Solvin's formula taking an alpha value of 0.05 with an intended confidence interval of 95%.

n= $\dfrac{N}{1+(Ne^2)}$

n= $\dfrac{980}{1+(980*.05^2)}$

= 284

Therefore the study considered 284 physicians from all private hospitals operating in Addis Ababa. The sample size taken from each hospital is calculated taking the numbers of physicians from each hospital and their percentage share out of the total.

The information obtained from the 2022 report of the Ethiopian food and drugs administration authority revealed that there are nine hundred and eighty physicians practicing in private hospitals operating in Addis Ababa. The following table shows the number of sample taken from each hospital.

The details also indicated the numbers of physicians practicing in each of the private hospitals. Accordingly the data obtained from the Ethiopian food and drugs administration authority is summarized by the table here under with the respective percentage and sample size from each private hospital operating in Addis Ababa.

Table 3.1. Number of physicians in each hospital and sample sized from each				
Private Hospital List In addis Ababa		No. of physicians	% from the total	No. of samples taken
S.N.	Hospital List			
1	ICMC General Hospital	31	3%	9
2	Migbare Senay General Hospital	32	3%	9
3	Bethzatha General Hospital stadium	42	4%	12
4	National General Hospital	38	4%	11
5	Ayu Primary Hospital	24	2%	7
6	Addis General Hospital	34	3%	10
7	Girum General Hospital	37	4%	11
8	Ethio Tebib General Hospital	39	4%	11
9	Teklehaimanot General Hospital	52	5%	15
10	St.Gabreal General Hospital	48	5%	14
11	Addis Hiwot General Hospital	39	4%	11
12	MCM General Hospital	42	4%	12
13	Kadisco General Hospital	44	4%	13
14	St.Yared General Hospital	33	3%	10
15	Yerer General Hospital	43	4%	12
16	Addis Cardiac Hospital	25	3%	7
17	Halelujah General Hospital	42	4%	12
18	Landmark General Hospital	47	5%	14
19	Hayat General Hospital	51	5%	15
20	Zenebaba General Hospital	36	4%	10
21	Afran General Hospital	21	2%	6
22	Aynalem Hospital	23	2%	7
23	Bethel Teaching Hospital	49	5%	14
24	Tezena General Hospital	42	4%	12
25	A.A Silk Road Hospital	19	2%	6
26	Ayertena Primary Hospital	24	2%	7
27	Amin General Hospital	23	2%	7
	Total	980	100%	284
Source:- Ethiopian Food and Drug Administration Authority, 2022				

3.5. Types and sources of data

The type of the data in the study involves primary and secondary data. The sources of primary data were physicians working in private hospitals of Addis Ababa. Secondary data was collected from books, various publications and websites which are directly related with the subject.

3.6. Method of data collection

Primary data was collected from the physicians working in private hospitals of Addis Ababa through questionnaires which were distributed to a total of 284 physicians contacting the available ones upon the time of visits. Both the distribution and the collection of the questionnaire were made in person.

Further data were collected from various books written on pharmaceutical promotion and prescribing behaviors of physicians. Web sites, different issues of magazines and newspapers focusing the subject will also be included.

3.7. Study Variables

The independent variables for this study were the promotional activities of pharmaceuticals namely face to face detailing, sponsoring meetings & continuing education, invitations, gifts and free drug samples each of which were considered by more than one question.

The dependent variable for this study was prescribing pattern of physicians which was assessed by four questions. Both the independent variables and the dependent variable are detail defined in section 2.1.3. of this study.

3.8. Research model specification

This study examined the impacts of pharmaceutical promotions on physicians prescribing pattern by adopting a model that is existed in most literature. The regression model which is existed in most literature has the following general form.

$Yi= ß_0 + ß1X1i + ß2X2i+ …… ßnXni + εi$

Where: - Yi is the dependent variable, $ß_0$ is the constant term, ß is the coefficient of the independent variables of the study, εi the normal error term.

Accordingly, the estimated models used in this study is modified and presented as follows

$PPP= ß_0 + ß1FFd+ ß2DS+ ß3GIF+ ß4SP+ ß5IN$

Where PPP = physicians prescribing pattern

FFD = face to face detailing

DS =drug samples

GIF = gifts

SP = sponsoring

In= invitations

3.9. Method of data analysis

The researcher used Statistical Package for Social Science (SPSS) version 20 to analyze the data. This software has been widely used by researchers as a data analysis technique (Zikmund, 2003). Both descriptive as well as inferential statistics were used to analyze the data (correlational and regression analysis).

3.9.1. Descriptive statistics

The indicators under the promotional activities of pharmaceuticals were analyzed using mean and standard deviation since mean is the most widely used and reported measure of central tendency (Marczyk, 2005).   They summarized and presented using tables and interpreted with simple sentences.   Besides, results of the descriptive statistics such as mean, standard deviation, minimum and maximum values were deployed to describe the characteristics of variables under investigation.

3.9.2. Inferential statistics

The relationship between the independent variables the promotional activities of pharmaceuticals and the dependent variable (physicians prescribing pattern) were analyzed using correlation.

Correlation is perhaps the most basic and most useful measure of association between two or more variables. Expressed in a single number called a correlation coefficient (r), correlations provide information about the direction of the relationship (either positive or negative) and the intensity of the relationship. Furthermore, tests of correlation provide information on whether the correlation is statistically significant (Marczyk, 2005). Correlation coefficients range from -1.0 to +1.0. The sign of the coefficients represents the direction of the relationship.

The Pearson's correlation coefficient measures the linear association between two scale variables (Marczyk, 2005). In this study, Pearson correlation coefficients will be used to measure the strength of the association between the promotional activities of pharmaceuticals and physicians prescribing pattern.

3.10. Validity and reliability

3.10.1. Validity

Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure (Khotari, 2004). One of the methods to test validity, content validity refers to whether or not the content of the manifest variables (questionnaire) is right to measure the latent concept (PPP) that the study is trying to measure (Muijs, 2010). In this study the researcher tried to develop content valid constructs by extensive search of literature to select carefully all the variables and their measurements from prominent sources (Saito et al (2010), Ali (2014), Noah M.Zaki (2014).

3.10.2. Reliability

The reliability of a measure refers to its consistency. One of the types of reliability, internal reliability is particularly important in connection with multiple-item scales. It refers each scale is measuring a single idea. According to Taneja & Kaushik (2007), Cronbach's alpha values higher than 0.6 shows data reliability. Therefore Cronbach's alpha was calculated to test reliability of the data for this study.

3.11. Ethical considerations

An important consideration a researcher must not overlook is the issue of ethics in research. The researcher, in accordance with this, took steps to make sure that no respondent in this research work was harmed in any way. First of all researcher will make sure that permission was sought and the aims and objectives of the study were made known to the hospitals and respondents. Who is conducting the study and for what purpose were clearly disclosed for the respondents on the questionnaire. Moreover, the voluntary participation of respondents was made to follow anonymity and confidentiality ethics of the research, the researcher clearly informed the respondents in written form that not to write their names on the questionnaire.

CHAPTER FOUR

4. Data analysis, interpretation and discussion

In this chapter, the collected data are summarized and interpreted in order to realize the ultimate objective of the study. The results of descriptive analysis and inferential analysis are presented and are discussed according to their relation to each of the relevant research objectives. The data were analyzed using SPSS version 20.

4.1. Response rate

From the 285 questionnaires distributed, 269 of them were returned out of which five were found to be incomplete and the remaining eleven were not responded. This resulted in 269 completed and usable questionnaires generating 94.4% response rate. According to Duplesis (2008) a response rate above 85% for a sample size less than 300 is excellent to perform a valid response. Consequently, the response rate for this research is excellent.

4.2. Reliability of responses

Cronbach's alpha was used to check the reliability of the data collected. According to Taneja & Kaushik (2007), Cronbach's alpha values higher than 0.6 shows data reliability. Upon calculating the Cronbach's alpha using SPSS the following result was obtained which showed that all the dependent and dependent variables scored s alpha value which is above the benchmarked value which is 0.6.

Table 3.2. Reliability Statistics		
Items	Cronbach's Alpha	N of Items
PPA	.954	5
FFD	.805	4
FDS	.863	2
GIF	.968	3
SPS	.948	3
INV	.972	3

Source:- SPSS output, 2022

4.3. Demographic distribution of respondents

The demographic distribution of the respondents is summarized by the following table 4.2.

Table 4.2. Demographic distribution of respondents			
Item	Description	Frequency	Percentage
Gender	Female	91	33.8%
	Male	178	66.2%
Age	25-30 years	17	6.3%
	31- 45 years	87	32.3%
	46-55 years	149	55.4%
	Above 56 years	16	5.9%
Specialty	General practitioner	91	33.8%
	Internist	87	32.3%
	Surgeon	44	16.4%
	Gynecology	13	4.8%
	Pediatrician	23	8.6%
	Others	11	4.1%
University attended	Public	208	77.3%
	Private	61	22.7%
Work experience	Below 5 years	41	15.2%
	6 - 10 years	104	38.7%
	11- 15 years	91	33.8%
	Above 15 years	33	12.3%
Experience in the current hospital	1-3 years	51	19.0%
	4-7 years	107	39.8%
	8-10 years	84	31.2%
	Above 10 years	27	10.0%
Source : SPSS output 2022			

As summarized by the table above the respondents were found to be composed of both genders. Overall, 91 (33.8%) female and 178 (66.2%) male respondents participated in responding the questionnaire.

Age wise, 17(6.3%) of the respondents were found in the 25- 30 years category while 87 (32.3%) of them were in 31-45 years, 149(55.4%) were in the 46-55 years and 16(5.9%) of them were in the above 56 years of age categories. This shows that the respondents' are all at rational age range to be trusted that they answer the questions responsibly and logically.

Concerning their specialty, 91(33.8%) general practitioners, 87(32.3%) internists, 44(16.4%) surgeons, 13(4.8%) gynecology specialists, 23(8.6%) pediatricians and 11(4.1%) physicians specialized in other fields participated in responding the questionnaire. Thus the responses collected from physicians representing various fields of specialty.

Majority of the respondents attended public university upon obtaining their first degree. This holds 208 (77.3%) of the respondents while 61 (22.7%) of them obtained their first degree in private universities indicating that the study considered physicians studied in both categories.

Concerning their work experience only 41 (15.2%) respondents were found to have work experience below five years. Majority 104(38.7%) have 6-10 years of experience, 91(33.8%) of them have 11-15 years of experience and 33(12.3%) of them have worked as physicians for over 15 years. Thus well experienced physicians responded the questionnaire adding to the reliability of the data.

Checking how long they work in the hospital that they were contacted to respond the questionnaire, 51(19%) worked for 1-3 years, 107(39.8%) of them worked for 4-7 years, 84(31.2%) of them were in the 8-10 years' experience category while the remaining 27(10%) of them have worked for more than 10 years in the current hospital. As the study assessed the previous three years, the respondents' distribution is fair enough to rely on their response.

4.4. Descriptive statistics

This section presents the data analysis of each of the elements, which are grouped under tangibility, reliability, responsiveness, assurance and empathy separately by using descriptive analysis. The responses under rating 1-strongly disagree, 2-disagree, 3-neutral, 4-agree and 5-strongly agree have been combined to indicate agreement or disagreement with a statement. The mean values show that the average of all the responses in each question and then by grand mean for one dimension.

As sited by Kidane (2012) in his book entitled "Relationship marketing in the Hotel Industry" , with five point scales, the intervals for breaking the range in measuring each variable are calculated as follows:

$$\frac{Max - MIN}{5} = \frac{5\text{-}1}{5} = 0.8$$

It means that the scores falling between the following ranges can be considered as agreement score: Hence,

- 1-1.80 means strong disagreement, (very low)
- 1.81 - 2.60 means disagreement, (low)
- 2.61 - 3.40 means neutrality, (moderate)
- 3.41 - 4.20 means agreement (high) and
- 4.21 - 5.00 means strong agreement (very high)

In this part, the researcher tried to assess the level of agreement of the respondents for each construct, namely: face to face detailing, free drug samples, gifts, sponsoring and invitations. This assessment helps to assess the physicians' prescribing pattern of the private hospitals according to the responses given by the physicians themselves. The descriptive statistics was used as a way to examine the mean, standard deviation and other information which are not apparent in the raw data. It was needed to determine the level of exposure of the physicians towards pharmaceuticals promotional activities and the physicians' perception of the influence of the promotional activities on their prescribing pattern.

The tables and discussions below contain descriptive data (mean and standard deviations) for the subscale of contribution of pharmaceutical promotional activities for prescribing pattern of physicians working in private hospitals of Addis Ababa as rated by the respondents.

4.4.1. Exposure of the physicians to promotional activities

The responses concerning the exposure of physicians to the promotional activities of pharmaceuticals are summarized by table 4.3 hereunder.

Table 4.3. Exposure level of physicians to pharmaceuticals' promotions			
Promotion types	N	Mean	Std. Deviation
Face to face detailing	269	3.46	1.244
Free drug samples	269	3.06	1.272
Gifts	269	3.18	1.236
Sponsoring	269	3.00	1.281
Invitations	269	3.00	1.345
Source: SPSS output, 2022			

As the data summarized by the table indicates the physicians are exposed more to face to face detailing with a mean value of 3.46 showing the majority's agreement that they are highly exposed to this type of pharmaceuticals' promotional activities. Gifts by promoters came second with a

mean value of 3.18 while free drug samples, sponsoring and invitations to meal came third, fourth and fifth place with mean values of 3.06, 3 and 3 respectively. Except the face to face detailing factor the respondents are found to be exposed moderately to the remaining factors. With an overall mean of 3.14 the physicians responded that they are exposed to all types of pharmaceuticals' promotional activities moderately. Though the result falls under the moderate scale, we can see that it approached to the minimum agreement point 3.41indicating that the exposure tends to be high.

4.4.2. Influence of pharmaceuticals' promotion on physicians

4.4.2.1. Face to face detailing

The influence of face to face detailing on physicians' prescribing pattern was assessed by four points and the result is tabulated hereunder.

Table 4.4. Influence of face to face detailing			
Items	N	Mean	Std. Deviation
Face to face detailing by pharmaceutical representatives is persuasive and influences my prescribing pattern towards their products	269	3.43	1.209
The approach of the representatives is of a kind that creates strong relationship with me and influences me prescribe their product.	269	3.49	1.239
The information the representatives provide me through various means is more detailed and accurate to make me rely on it.	269	3.41	1.300
The relationship the representatives makes me explore the difference of their product from others by prescribing it	269	3.32	1.305
Source: SPSS output, 2022			

As the data collected indicates, the fact that face to face detailing by pharmaceutical representatives creates strong relationship with physicians and influence prescribing pattern is agreed by the majority of the respondents scoring a mean value of 3.49. In addition the persuasiveness of the PRs approach is agreed by the majority with a mean value of 3.43. Third comes the reliability and description of the PRs is agreed with a mean value of 3.41 and the fact that the relationship formed due to face to face detailing makes physicians prescribing their product being interested to explore the difference from other products.

This may indicate that the PRs approach during face to face detailing is a calculated one to be persuasive enough to influence the doctors' decision, form influential relationship, encourage the

doctors explore the difference by prescribing it. Relating this result to the finding that showed that physicians working in private hospitals of Addis Ababa are exposed more to face to face detailing, one can say that it is the major promotional activity PRs use to influence physicians. The relationship created can also be used to make the physicians involve in the other ways of pharmaceuticals promotional strategies.

4.4.2.2. Free drug gifts

The influence of free drug gifts was tested with two items and the result is tabulated hereunder.

Table 4.5. Influence of free drug gifts			
Items	N	Mean	Std. Deviation
The free drug samples they provide me makes me consider the product every time I am prescribing	269	3.48	1.239
Free drug samples they provide encourages me study the difference from others by prescribing it	269	3.76	1.025
Source: SPSS output, 2022			

The data collected shows that the fact that the free drug gifts make the physicians consider the product every time they prescribe medicines is agreed by the majority with a mean value of 3.48 whereas such free drugs' encouragement to study the difference from other products is responded indifferent with more agreements and considerable numbers of disagreements and few indifferent responses. This may show that the physicians are given such free drug gifts in order to attract their attention to that product and encourage them to test the difference. In both ways the influence is inevitable whether considerable or not.

4.4.2.3. Gifts

The influence of gifts by the pharmaceuticals' representatives was assessed by three items and the data collected is tabulated hereunder.

Table 4.6. Influence of gifts			
Items	N	Mean	Std. Deviation
Gifts from the pharmaceuticals are valuable to influence my prescribing pattern	269	3.22	1.336
Gifts from the pharmaceuticals influence my prescribing pattern whether the value is high or low	269	3.00	1.289
Gifts from pharmaceuticals influence other physicians' prescribing pattern	269	3.10	1.305
Source : Own survey, 2022			

All the items in this category ended up in indifferent responses with mean values of 3.22, 3.00 and 3.10. The respondents relatively rated higher to the fact that the gifts by pharmaceuticals' representatives are valuable to influence their decision showing that the gifts are not simply stationaries but are of higher values which influence the prescribing decisions of considerable numbers of doctors in private hospitals of Addis Ababa.

4.4.2.4.   *Sponsorship*

In this category most of the respondents disagreed that the information they obtain from the speeches on pharmaceuticals' sponsored meetings are accurate and valuable for their prescribing decision and nearly agreed to the fact that the meetings have promotional attitudes which influence their decision with respective mean values of 2.88 and 3.35: both lying in the indifferent scale but near to the disagreement and agreement points respectively.   However the majority of them affirmed that the pharmaceuticals' sponsoring for continuing medical education is influential on their prescribing decision with a mean value of 3.43. The facts are summarized by the following table.

Table 4.7. Influence of sponsorship			
items	N	Mean	Std. Deviation
Most information obtained from the speeches on pharmaceuticals sponsored meetings are accurate and valuable for my prescribing decision	269	2.88	1.266
Most sponsored meetings have promotional attitudes and influence my prescribing decision towards their product	269	3.35	1.177
Pharmaceuticals sponsoring for continuing medical education influences my prescribing pattern	269	3.43	1.165
Source : Own survey, 2022			

4.4.2.5. *Invitation*

The following table presents the data collected on the influence of invitations for meals.

Table 4.8. Influence of invitations			
Items	N	Mean	Std. Deviation
Invitations for meal by PRs creates strong bond with physicians and influence their prescription pattern and choose their product	269	3.03	1.277
Invitation for meals encourages physicians prescribe their product	269	2.84	1.252
The PRs invitation for meals help to exchange valuable information but doesn't influence physicians prescribing pattern	269	3.17	1.307
Source : Own survey, 2022			

The responses regarding invitations fall in the indifferent scale and the fact that they create strong bond which influence prescribing pattern is relatively rated higher with mean value of 3.03 and the fact that invitation for meals help to exchange valuable information followed with a mean value of 3.17. The result indicates that invitations for meal are not as influential as the other promotional tools but have their own respective roles in forming bonds between the PRs and the physicians which can impact the physicians' prescribing pattern.

4.4.2.6. *Prescribing pattern of physicians*

Checking whether the overall pharmaceuticals' promotional packages influence physicians prescribing pattern, the following result was obtained.

| Table 4.6. Prescribing pattern of physicians			
Items	N	Mean	Std. Deviation
Face to face detailing influences my decision	269	3.68	1.024
Free drug gifts influence my decision	269	3.26	1.222
gifts influence my decision	269	3.51	1.174
sponsoring influence my decision	269	3.57	1.169
invitations influence my decision	269	3.16	1.209
Source : own survey, 2022			

Overall the result tabulated above shows face to face detailing is the highest influencer with a mean value of 3.68, followed by sponsoring with mean value of 3.57, gifts took the third place with a mean of 3.51, free drug gifts and invitations took the fourth and fifth place in influencing prescribing decision of physicians' working in private hospitals of Addis Ababa wit respective mean values of 3.26 and 3.16.

The result indicated that the physicians are highly exposed and are being influenced more by the face to face detailing. One can also see that the strong relationship created by the face to face detailing and invitations for meal pave the way to free drugs as well as other gifts and arrangement of sponsored continuing education and the sum of these activities influence the physicians' decision.

4.5.   Tests for Regression Assumptions

4.5.1. Normality

The normality test was performed in order to check whether the variables can be assumed to be normally distributed as it is an important decision as most of the parametric statistical tests that were considered earlier relied on the assumption that variables are normally distributed. The normality test was performed by checking the distribution of regression residuals. As can be seen by the histogram hereunder, the distribution is fairly normal indicating that the data is doesn't have normality problems.
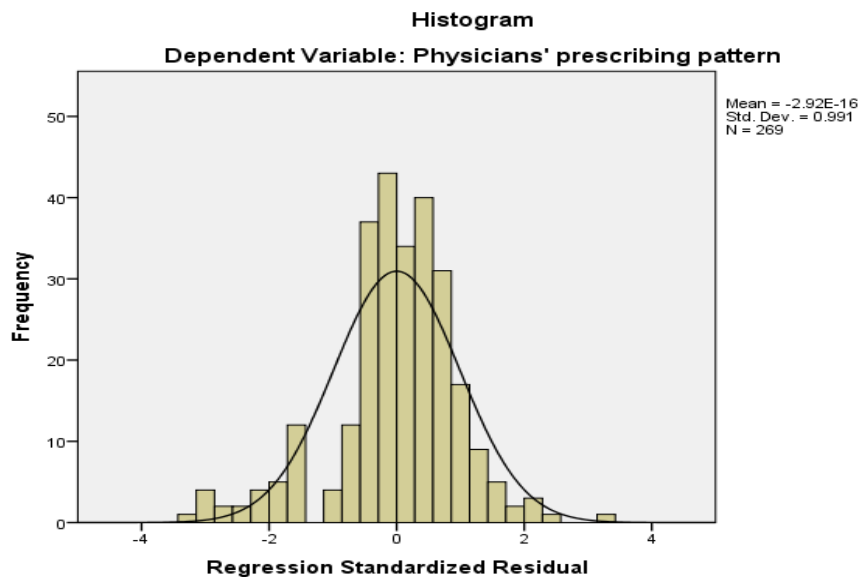
Source: SPSS output, 2022

4.5.2. Linearity

The other assumption of linear regression is that the relationship between the IVs and the DV can be characterized by a straight line. Deploying a simple way to check this, scatter plots were produced indicating the relationship between each of the IVs and DVs have linear relationships. The scattered plots of each IV against the DV showed that the expected linearity exists between the variables as can be seen by the scattered plot hereunder. So this assumption is also met.

Scatterplot

Dependent Variable: Physicians' prescribing pattern
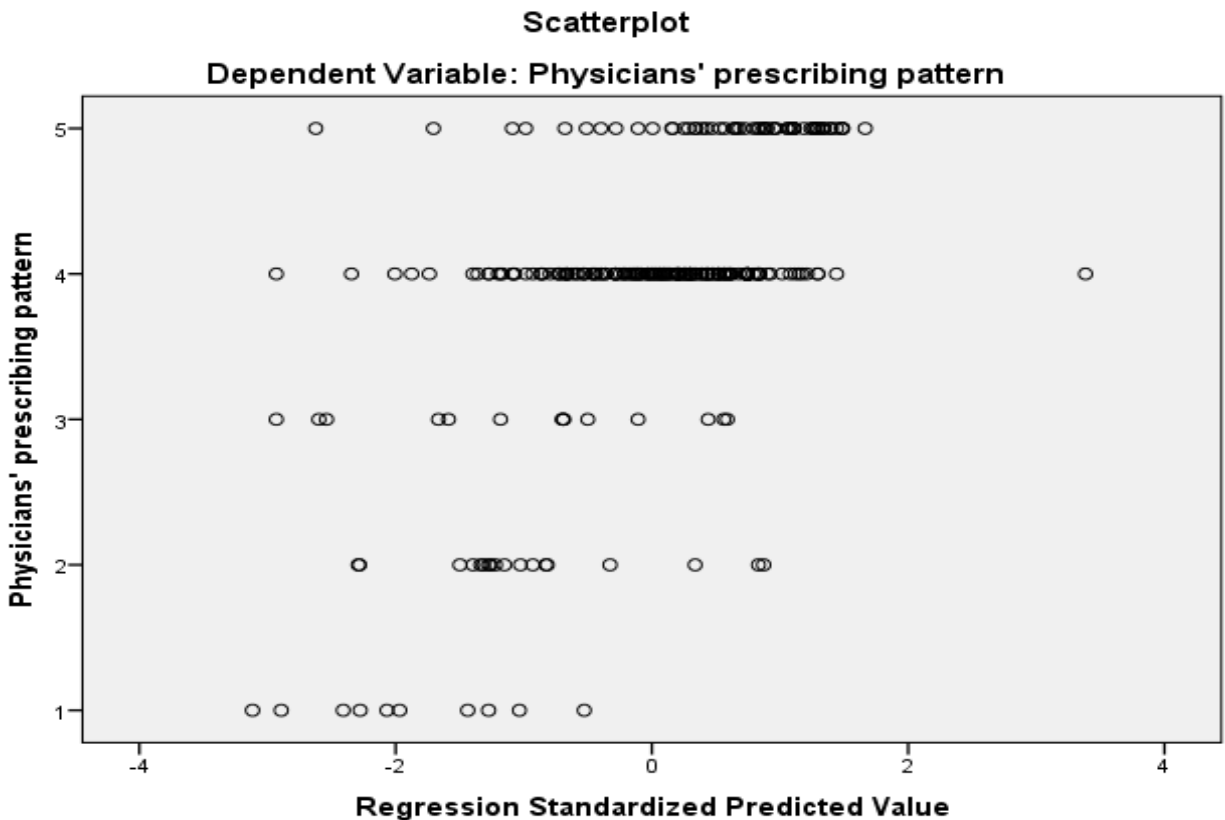
Source: - SPSS output, 2022

4.5.3. Correlation Result

Based on this assumption there must be no co-linearity between the predictors meaning the predictors must not highly co-related with one another. The SPSS output by which the multi co-linearity assumption is checked is presented hereunder.

Correlations		Face to face detailing	Free drug gifts	gifts	sponsoring	invitations
Face to face detailing influences my decision	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	269				
Free drug gifts influence my decision	Pearson Correlation	.134*	1			
	Sig. (2-tailed)	.028				
	N	269	269			
gifts influence my decision	Pearson Correlation	.120*	.272**	1		
	Sig. (2-tailed)	.049	.000			
	N	269	269	269		
sponsoring influence my decision	Pearson Correlation	.066	.115	.152*	1	
	Sig. (2-tailed)	.281	.060	.012		
	N	269	269	269	269	
invitations influence my decision	Pearson Correlation	.065	.179**	.485**	.141*	1
	Sig. (2-tailed)	.287	.003	.000	.021	
	N	269	269	269	269	269
*. Correlation is significant at the 0.05 level (2-tailed).						
**. Correlation is significant at the 0.01 level (2-tailed).						

As the correlation table above indicates the correlation between the independent variables is less than 0.8. The maximum correlation (r) is 0.272 which is less than 0.8. According to Everitt (2004) correlations with r<0.8 are considered the variables are not highly correlated. Therefore the co-linearity assumption is also met for the data used for this study.

4.6. Relationship between Physicians' prescribing pattern and Pharmaceuticals' promotion activities

4.6.1. Bivariate Correlation Analysis

The Bivariate correlation procedure computes the pair-wise association for a set of variables and displays the results in a matrix. It is useful for determining the strength and direction of the association between two scale or ordinal variables. The Pearson correlation coefficient measures the linear association between two scale variables. The following values of correlation interpretations suggested by Cohen (1988) were used as guidelines for the interpretation of the correlation results:

Correlation coefficient:

- (r) = 0.10 to 0.29 or r = -0.10 to -0.29 considered Very Weak ,
- r = 0.30 to 0.49 or r = -0.30 to -0.49 considered Weak, and
- r = 0.50 to 1.0 or r = -0.50 to -1.0 considered Strong.

Importantly, these are rough guidelines. A number of other factors, such as sample size, need to be considered when interpreting correlations. The table below presents the correlation analysis between the independent variables and the dependent variable.

Table 4.6. Bivariate Correlation Analysis		
Pharmaceuticals promotional activities		Physicians' prescribing pattern
Face to face detailing	Pearson Correlation	.584**
	Sig. (2-tailed)	.000
	N	4
Free drug samples	Pearson Correlation	.481**
	Sig. (2-tailed)	.000
	N	2
Gifts	Pearson Correlation	.410**
	Sig. (2-tailed)	.000
	N	3
Sponsoring	Pearson Correlation	.501**
	Sig. (2-tailed)	.000
	N	3
Invitations	Pearson Correlation	.402**
	Sig. (2-tailed)	.000
	N	3
Source:- SPSS output, 2022		

This study assumed that Pharmaceutical marketing activities (Face to face detailing, Drug samples, gifts, sponsoring meetings, and invitation for meals by Pharmaceuticals sales representatives) have a significant and positive effect on improving physicians' prescription pattern. In correlation analysis we have seen Physicians' prescription behavior has a moderate correlation coefficient with marketing activities.

The correlation matrix in the above table indicates that a positive significant correlation was observed between all the five physicians' prescribing pattern dimensions (r=0.584, p value =0.000) for face to face detailing. (r=0.481, p value =0.000) for free drug samples, (r=0.410, p value =0.000) for gifts, (r=0.501, p value =0.000) for sponsoring and (r=0.402, p value =0.000) for gifts.

The relationship indicates that high scores of pharmaceutical promotional activities are associated with high scores of change management and positive relationship is observed between pharmaceutical promotional activities (face to face detailing, free drug samples, gifts, sponsoring and invitations) and prescribing pattern of physicians working in private hospitals of Addis Ababa.

4.6.2. Regression analysis

According to Marzyk (2005), linear regression is a method of estimating or predicting a value on some dependent variable given the values of one or more independent variables. Like correlations, statistical regression examines the association or relationship between variables. Unlike correlations, however, the primary purpose of regression is prediction.

There are two basic types of regression analysis: simple regression and multiple regressions. In simple regression, we attempt to predict the dependent variable with a single independent variable. In multiple regressions we may use any number of independent variables to predict the dependent variable.

The research at hand relied on a 95% level of confidence; therefore a p-value equal to or less than 0.05 implies that the results are not subject to change, according to the Independent Sample T-test. More specifically, the relationship between independent variables and the dependent variable continuous improvement is significant at p = 0.000.

R is a correlation between the observed values of y, the values of y predicted by multiple regression models. Therefore, large values of the multiple R represent a large correlation between the predicted and observed values of the outcome. The model summary table reports the strength of

relationship between the independent variables face to face detailing, free drug samples, gifts, sponsoring and invitations and the dependent variable physicians prescribing pattern. The following model summary shows this correlation

Table 4.7 :- regression analysis				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.570[a]	.425	.433	.00116
Dependent Variable: Physicians' prescribing pattern				
Predictors: (Constant), Invitation 1, Face to face detailing 1, Free drug gsamples1, Gifts 1, Sponsoring 1[b]				
Source: SPSS output, 2022				

 In the above table the R is multiple correlation coefficients between predictor and outcome, with a value of 0.570   While Adjusted R square shows the ratio of interdependence. Value of R square implies 42.5% of the variance in the dependent variable can be predicted from independent variables. This indicates that 42.5% of the change in the level of the changes of dependent variable (physicians' prescribing pattern) investigated from Private hospitals of Addis Ababa is interpreted as resulting from the independent factors (face to face detailing, free drug samples, gifts, sponsoring and invitations.

4.6.3.   Analysis of variance
Table 4.8. Significant Of Independent Variables on Dependent Variable

	ANOVA[a]				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76.311	5	15.262	25.372	.000[b]
	Residual	158.202	263	.602		
	Total	234.513	268			
a. Dependent Variable: Physicians' prescribing pattern						
b. Predictors: (Constant), Invitation 1, Face to face detailing 1, Free drug gsamples1, Gifts 1, Sponsoring 1						
Source: SPSS output, 2022						

This part of the output contains an analysis of variance (ANOVA) that tests whether the model was significantly better at predicting the outcome than using the mean as a 'best guess'. Specifically, the F-ratio represents the ratio of the improvement in prediction that results from fitting the model (labeled 'Regression' in Table 4.7), relative to the inaccuracy that still exists in the model.

The F-test was used to test the significance of the regression model as a whole. The decision rule for F-ratio statistic was to reject the null hypothesis if F was greater than the critical value of an appropriate level of significance, and not to reject the null hypothesis when F value was smaller or equal to the critical value of an appropriate level of significance.

The computed F values were then tested for statistical significance and demanding value P=0.05 is mostly taken as marking an appropriate boundary of significance. P has to be lesser than 0.05(5%) for the F ratio to be vital (Saunders, Lewis, and Thorn hill, 2007). If F ratio is significant at p<0.05, reject the thought of no variations and settle for that these are very different from zero (Cardinal and Aitken, 2006).

If the improvement due to fitting the regression model is much greater than the inaccuracy within the model then the value of *F* was greater than 1(**one)** and SPSS calculates the exact probability of obtaining the value of *F* by chance. Therefore, from this model the F-ratio is 25.372, which is very unlikely to have happened by chance or is highly significant (***P<0.001***). Hence, the researcher can interpret these results as meaning that the final model significantly improves the ability to predict the outcome variable than using the mean as a best guess.

4.7.   Results of the Regression Analysis

This study assumed that Pharmaceutical marketing activities (Face to face detailing, Drug samples, gifts, sponsoring meetings, and invitation for meals by Pharmaceuticals sales representatives) have a significant and positive effect on improving physicians' prescription behavior. In correlation analysis we have seen Physicians' prescription behavior has a moderate correlation coefficient with marketing activities.

But Correlation analysis alone does not provide enough information regarding the interrelationships between the variables and not implies a cause-effect relationship between the variables; multiple linear regression analysis has been used to test this assumption.

The result of the regression analysis is tabulated hereunder. The table also indicates face to face detailing, free drug samples, gifts, sponsoring and invitations have a significant influence on prescribing pattern of physicians working in private hospitals of Addis Ababa at 95% confidence level.

Table 4.8. Regression table	Coefficients[a]				
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.911	.247		3.691	.000
Face to face detailing influences my descion	.247	.045	.283	5.516	.000
Free drug gifts influence my decision	.128	.039	.167	3.293	.001
Gifts influence my decision	.225	.045	.199	4.963	.000
Sponsoring influence my decision	.159	.039	.271	4.036	.000
Invitations influence my decision	.104	.043	.134	2.413	.001
a. Dependent Variable: Physicians' prescribing pattern					
Source: SPSS output, 2022					

The significant physicians' prescribing pattern factors have been included for the establishment of the function. Accordingly the following regression function is established.

$$Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

$$Y = .911 + 0.283 + 0.167 X_2 + 0.199 X_3 + 0.271 X_4 + 0.134 X_5$$

The results of multiple regressions, as presented above, revealed that face to face detailing has a positive and significant effect on Physicians' prescribing pattern with a beta value (beta = 0.283), at 99% confidence level ($p < 0.01$). The results of the above table showed that the standardized coefficient beta and p value of free drug gifts was positive and significant (beta = 0.167, $p < 0.01$). Likewise, the results also showed that the standardized coefficient beta and p value of gifts was positive and significant (beta = 0.199, $p < 0.01$), the standardized coefficient beta and p Value also show that sponsoring and invitations are also significant and positive at (beta=.271, p=0.01) and (beta=.134, P.01) respectively.

The findings of this study also indicated that face to face detailing is the most important factor to have positive and significant effect on physicians' prescribing pattern with a Beta value of .283, followed by sponsoring with beta value of .271. Gifts, free drug samples and invitations took the

third, fourth and fifth places with respective beta values of .199, .167 and .134 to influence prescribing patterns of physicians in private hospitals of Addis Ababa.

The fact that promotional activities of pharmaceuticals impact prescribing patterns of physicians in general was proved by many researches. Mai Alowi and Yusuf Khani (2018) of Kenya, Taneeja, (2017) in India and Pinckney, (2016) of USA can be sited as those who proved the overall marketing mix of pharmaceuticals impact the prescribing pattern of physicians. This study also found out that the most common pharmaceuticals promotional activities influence the prescribing decision of physicians in private hospitals of Addis Ababa.

This result of this study is also in line with the research made by Workneh, (2016) working in public and private hospitals of Addis Ababa which found out that face to face detailing is the most impacting factor on the prescribing pattern of physicians. However the results differ with the findings of this study on the second and third factors. The study by Workneh identified that the second factor is gifts whereas this study found out that it is sponsoring.

Though this study is in line with the findings of other studies in terms of the fact that physicians' prescribing pattern is influenced by pharmaceuticals' promotional activities, it differs by the degree of ach promotional activity's impact. For instance this study agreed with the study by Workneh (2016) by the most influential promotional activity is face to face detailing but contradicts the second and third influential promotional activities.

These differences may be related to the fact that the earlier studies are made on all hospitals without separating the private and public ones whereas this study is made specifically on the private hospitals. Therefore though decision of private and public hospitals are both influenced highly by face to face detailing, physicians of private hospitals are influenced more by sponsoring than gifts when compared to the physicians of public hospitals. The variation can also be related with the differences in the study periods assuming that the thought of physicians in the past is changed.

CHAPTER FIVE

5. Summary, Conclusion and Recommendations

This chapter summarize and conclude that findings of the research and forwards possible recommendation**.**

5.1. Summary of major findings

The first target of this study was to assess to which promotional activities physicians working in private hospitals of Addis Ababa are exposed. The findings of this study revealed that the physicians are exposed to all the given pharmaceuticals' promotional activities but in varying degrees. Accordingly with a mean value of 3.46 indicating majority's agreement face to face detailing is found to be the promotional activity the physicians are mostly exposed followed by gifts having a mean value of 3.18. Free drug samples ranked third with a mean value of 3.06 whereas sponsoring and invitations took the fourth place with an equal mean score of 3.00. Thus, the descriptive statistics indicated that the physicians are exposed to the given promotional activities in different levels.

In identifying which promotional activity impacts prescribing pattern of physicians working in private hospitals of Addis Ababa, the descriptive statistics performed based on the responses collected indicated that all the given promotional activities influence their prescribing pattern. Like that of their exposure the physicians are found to be influenced by all the factors provided to rate in different degrees. Thus, the highest influencer from the pharmaceutical promotional activities is found to be face to face detailing with a mean value of 3.68 followed by sponsoring scoring a mean value of 3.57. Third influencer with a mean value of 3.51 is found to be gifts while with respective mean values of 3.26 and 3.16 free drug gifts and invitations hold the remaining ranks.

Upon analyzing the effect of pharmaceuticals' promotional activities on prescribing pattern of physicians working in private hospitals of Addis Ababa, the study assumed that all the set of five promotional activities have positive and significant effect. The inferential statistics made in this regard deploying linear regression analysis on the overall model statistics of dependent variable physicians' prescribing decision resulted R value of .570 which indicates strong correlation between PPP and the set of five independent variables (FFD, FDS, GIF, SPO, and INSs). The R

square value of .425 that all independent variables included in the model explained 42.5% of variance in dependent variable (Physicians' prescribing decision). Hence, the overall model statistic of PPB (R^2 = .425), is supported the view that pharmaceutical marketing activities has a positive influence on physicians' prescribing decision.

From the coefficient table of dependent variable PPP, positive and significance relationship found in all of the given promotional activities; Face to Face detailing (β = .283, p= .001), Drug Samples (β=.167, P=0.000), Gifts (β = .199, p= .001), and Sponsoring (β = .271, p= .000) and invitations (β = .134, p= .001). Among these independent variables, face to face detailing (β = .283, p= .001) and Sponsoring meetings (β = .271) are found to be the best predictors of prescribing pattern of physicians working in private hospitals of Addis Ababa'. Thus, a change in the above mentioned variables is found to result in a significant change on the dependent variable Physicians' prescribing decision (PPP).

5.2. Conclusions

Referring the exposure of the physicians to pharmaceuticals' promotional activities the study found out that they are exposed to all of the five given activities in various degrees and face to face detailing is of the highest exposure for them followed by gifts, free drug samples sponsoring and invitations respectively. Furthermore the study revealed that all the given five promotional activities influence the prescribing pattern of the studied physicians and found out that face to face detailing is still the highest to impact their decision. Sponsoring, gifts, free drug samples and invitations took the remaining places respectively.

From the correlation analysis the correlation coefficient between dependent variable and independent variable is between 0.402 to 0.584 showing there is a moderate to strong association, thus it is concluded that there is a strong association between Pharmaceuticals' promotional activities and physicians' prescribing behavior. And in regression analysis of overall PPB, 42.5% PPP is found to be due to the promotional activities by pharmaceutical companies. The beta values of the independent variables are all positive. Hence, it can be concluded that there is positive and significant relationship between promotional activities namely face to face detailing, free drug samples, gifts sponsoring and invitations and physicians' prescribing behavior.

There are also similar evidences from previous literatures which revealed successful execution of these activities benefited pharmaceutical companies in achieving their marketing and sales

objectives. Mai Alowi and Yusuf Khani (2018) of Kenya, Taneeja, (2017) in India and Pinckney, (2016) of USA, Workneh, (2016) of Ethiopia are all proved that the influence of the studied promotional activities by pharmaceuticals significantly impact physicians' prescribing pattern.

Comparing the results of this study with the study made by Workneh, (2016) which considered both public and private hospitals' physicians, the results are in line in finding out the positive and significant relationship between prescribing pattern and promotional activities. However the previous study found out that the same predictors have a total of 33.6% impact on the dependent variable whereas this study found a higher impact which is 42.5%. Furthermore the previous study found out the highest impact is face to face detailing and the lowest is invitation which is in line with this study. However different results were found to the second third and fourth since the previous found the second, third and fourth are respectively gifts, free drug samples and sponsoring while this study found out that second third and fourth influencers are sponsoring, gifts and free drug samples.

5.3. Recommendations

This study examined the impact of pharmaceutical marketing activities on Physicians prescription behavior. On the basis of the findings and conclusions mentioned, the following recommendations were forwarded:

This study as well as previous studies revealed that pharmaceutical drug promotions influence drug prescription. More specifically, researchers showed evidence of an association between exposure to the information provided by pharmaceutical company representatives (PCRs) and a higher frequency of prescription. The World Health Organization (WHO) raised serious concerns over the possibility that pharmaceutical firms might have undue influence on the prescription pattern of physicians and promote unethical promotion activities of pharmaceutical firms. Therefore; although physicians should give due attention to hear the pharmaceutical sales representatives ideas that may help to develop their professional competency in using and prescribing right medicine for best treatment outcome, they must give due consideration to the intentions of the representatives and check the information obtained from them against other sources to remain on the ethical side.

Prescription drug marketing is unique. The physician decides which drug a patient will purchase, so marketing strategies focus mainly on influencing the decision of the physician. Therefore sales representatives of pharmaceutical companies should be provided with appropriate training about ethical and professional promotion that would enable PSRs to act in such a way that the communication is desirable and appreciable by physicians

As some of the promotional techniques that pharmaceutical companies have used to maximize their profit margins are informed by two factors: the need to promote specific drugs; and the need to enhance company reputation through stronger relations with physicians predominantly which can pave the way to unethical approaches. Therefore government bodies and professional societies must take action concretely define appropriate interactions between doctors and pharmaceutical industry or prohibiting inappropriate interactions in their code of ethics.

5.4. Limitations of the study

This study has some limitations. First, the fact that this study was based on self-report of doctors about the effect of pharmaceutical promotion on their prescribing decision the reliance of self-report is one of the main issues of the studies similar to ours.

The major constraints faced by the researcher while conducting this study were: First, lack of empirical research on the related study area especially in our country, and also the non-availability of adequately published and documented data on the topic

The study was conducted on licensed physicians who were exposed to promotion and other information from pharmaceutical companies using self-administered structured questionnaire. Moreover, it is limited only to practicing physicians working in private hospitals of Addis Ababa at the time of the study and may not show the practices of other health professionals who have the power of prescribing.

5.5. Suggestions for future studies

This study is conducted only based on data collected from Addis Ababa private hospitals. However the impacts of pharmaceutical marketing activities need to include other area of the country outside the capital so that we can make a generalization about the prescribing behavior of physicians practicing in the whole of Ethiopia.

Further longitudinal research is required to make certain cause – effect relationship for the generalizability of the actual relations ship between pharmaceutical marketing activities and physician prescribing decision in Ethiopian context.

Further interventional studies also need to be conducted to strengthen the findings of this study

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Questionnaire

ST. Marry University

Questionnaire to be filled by physicians

Dear respondents

This questionnaire is designed by a student of ST. marry University to undertake a research under the title impacts of pharmaceuticals promotion activities on physicians' prescribing patterns in partial fulfillment of the requirements for a Masters of Business Administration.

The general objective of the research is to assess the current impacts of the promotional activities by pharmaceuticals on prescribing patterns of physicians in private hospitals of Addis Ababa. It is strictly for academic purpose and therefore all information provided shall be treated with maximum caution and confidentiality.

General Instructions:

- ➢ To maintain confidentiality, please do not write your name or sign anywhere in the questionnaire.
- ➢ Please complete each parts of survey with care, honesty and due attention
- ➢ Put a tick mark in the space provided.
- ➢ You may mark more than one choice if you find it appropriate.
- ➢ You may pass over a question if it is not applicable for you.

I would like to pass my heart felt gratitude for your precious time!!

Sincerely yours

Part I: - General information of respondents

1. Gender   Male   ☐

                   Female   ☐

2. Age   25-30 years   ☐

                         31- 45 years   ☐

                         46- 55 years   ☐

                         Above 56 years   ☐

3. Specialty of practice

                         General practice   ☐

                         Internist   ☐

                         Surgeon   ☐

                         Gynecology   ☐

                         Pediatrician   ☐

                         Others please specify_____

4. University attended for your first degree

Public   ☐   Private   ☐

5. Years of practice

                         Less than 5 years   ☐

                         6- 10 years   ☐

                         11 – 15 years   ☐

                         Above 15 years   ☐

6. Experience in your current hospital

                         1-3 years   ☐

                         4- 7 years   ☐

                         8-10 years   ☐

                                                    ☐

Above 11 years

Part II. Level of exposure

Please mark one of the relevant numbers provided in one of the columns adjacent to each alternative pharmaceutical tools according to the level you are exposed for.

1 : very low, 2: low, 3: moderate, 4; high and 5: very high

S.N.	Alternative pharmaceutical promotion tools	1	2	3	4	5
1	Face to face detailing					
2	Free drug samples					
3	Gifts					
4	Sponsoring					
5	Invitations					

III. Impacts of pharmaceuticals' promotional tools

Please rate each of the following claims about the effectiveness of pharmaceutical marketing strategies in influencing physicians' prescribing practices. Where, 1= strongly disagree, 2= disagree, 3 =indifferent, 4= agree and 5= strongly agree

S.N.	Alternative pharmaceutical promotion tools	1	2	3	4	5
FF1	Face to face detailing by pharmaceutical representatives is persuasive and influences my prescribing pattern towards their products					
FF2	The approach of the representatives is of a kind that creates strong relationship with me and influences me prescribe their product.					
FF3	The information the representatives provide me through various means is more detailed and accurate to make me rely on it.					
FF4	The relationship the representatives makes me explore the difference of their product from others by prescribing it					
FDS1	The free drug samples they provide me makes me consider the product every time I am prescribing					
FDS2	Free drug samples they provide encourages me study the difference from others by prescribing it					
GF1	Gifts from the pharmaceuticals are valuable to influence my prescribing pattern					
GF2	Gifts from the pharmaceuticals influence my prescribing pattern					

	whether the value is high or low
Gf3	I never received any kind of gifts from the pharmaceuticals to judge whether it influences my prescribing pattern
SP1	Most information obtained from the speeches on pharmaceuticals sponsored meetings are accurate and valuable for my prescribing decision
SP2	Most sponsored meetings have promotional attitudes and influence my prescribing decision towards their product
SP3	Pharmaceuticals sponsoring for continuing medical education influences my prescribing pattern
IN1	Invitations for meal by PRs creates strong bond with physicians and influence their prescription pattern and choose their product
IN2	Invitation for meals encourages physicians prescribe their product
IN3	The PRs invitation for meals help to exchange valuable information but doesn't influence physicians prescribing pattern

Part IV. Physicians' prescribing pattern

Please rate each of the following observations of physicians' prescribing patterns. Where, 1= Strongly Disagree, 2= Disagree, 3 =Indifferent, 4= Agree and 5= Strongly Agree.

S.N.	Items	1	2	3	4	5
1	Face to face detailing by PRs influences my prescribing pattern to choose their product					
2	Free drug samples provided by PRs influences my prescribing pattern to choose their product					
3	Gifts by PRs influences my prescribing pattern to choose their product					
4	Sponsoring meetings and educational programs by pharmaceuticals influences my prescribing pattern to choose their product					
5	Invitations of meals or other events made by the representatives influences my prescribing pattern to choose their product					

Thank You !!!