

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

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Abstract: Globally, therapeutic business is among the most significant driving forces in economy with a revenue US\$ 1 trillion each year. Oncology segment is the largest therapeutic area in the pharmaceutical industry and it is expected to cross around US\$ 2.3 billion by 2024. The pharmaceutical industry in Pakistan is estimated by IM Sat rupees 300 billion. Pharmaceutical segment is unique in relation to other segments of marketing as the prime-focused customers for the companies are the physicians because they prescribe products to the patients and therefore, pharmaceuticals influence behaviors of physicians by employing various kinds of marketing and promotional techniques. This research study aimed to test a well-known theoretical model called theory of planned behavior to find out the decision-making patterns of Oncologists (physicians who diagnose and treat cancers) in the relationship with marketing practices of pharmaceuticals firms in Pakistan. This study was carried out in the North region (Islamabad, Rawalpindi, KPK) of Pakistan. The study followed post-positivism philosophy. A sample of eighty-nine oncologists was selected. Data was gathered via a structured five-point Likert scale survey questionnaire. The data was analyzed using descriptive statistics and multiple regression and for the mediation analysis, methods proposed by Andrew Hayes (2013) and the Sobel (1982) were applied. The findings of this research study revealed that, except expectations of patients, all the research hypotheses were accepted and suggested that Ajzen's theory of planned behavior can be used to explore the impact of pharmaceuticals marketing on the decision-making patterns of Oncologists. It was also found out that Behavioral Intention plays a significant role of intervening variable between Drugs' Characteristics (Quality, Price and Availability of products) and Physicians' Habit Persistence. Constructed upon the important results of the current research work, few recommendations have been suggested to the marketing managers of pharmaceutical companies which is predictable to have substantial contribution in shaping the direction of marketing policies and practices. Furthermore, few ethical considerations for the Drug

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Regulatory Authority of Pakistan and Health Department have also been provided which, if implemented, can be beneficial for the cancer survivors particularly, and patients of other segments, generally.

Introduction

Background of the Study

According to the World Health Organization (WHO), in order to retain and maximize their market share, pharmaceutical companies allocate above one-third of their sales profits on marketing and promotions of their products – almost double the spending on research and development. In the same connection, above US\$ 1 trillion have been spent by worldwide pharmaceutical industry and most of the spending is accredited for the market extension in developing countries. These trends are expected to exceed US\$ one and half trillion (PACRA). Oncology segment, an area of medicine that deals with the study of cancer including their development, diagnosis, treatment and prevention, remained the largest therapeutic area in pharmaceutical industry to achieve above US\$ one hundred billion in the year 2017 and it is predictable this segment will keep its impressive pace to cross US\$ two hundred and thirty-three billion by 2024 by 12.2% CAGR (PACRA).

Pharmaceutical segment is exceptional and unique as compared to other segments of marketing as here the prime focused customers are the doctors because they recommend medications to the patients and therefore, pharmaceutical companies comprehend that it is critical to influence physicians' prescribing behavior by employing various kinds of marketing and promotional techniques and tools like personal selling, sales promotion, direct marketing and advertising (Haddad et al., 2014). As highlighted by Wazana (2000), physicians are in frequent interactions with pharmaceuticals and their medical representatives who spend a big expanse of money on them in shape of sponsored teachings, symposiums, free meals and traveling with families and handsome gifts. Further, sponsored continuous medical educations programs (CMEs), funding for stay and travel to attend educational events and presentations given by pharmaceutical companies are also linked with irrational prescribing.

The core theme of this study is the prescribing behavior of oncologists (*physicians who diagnose and treat cancer*) in the light of theory of planned behavior proposed by Icek Ajzen (1991). To understand behaviors of healthcare professionals and to advise the design of interventions intended to alter such behaviors, there has been growing recognition of the need for theory-based research (Foy et al., 2011; Eccles et al., 2006; Godin et al., 2008; Grimshaw et al., 2001). Most of the recent research work on decision-making patterns is based upon the exploratory methods rather theoretical approach to describe or infer the prescribing behavior of doctors. So far, research work regarding prescribing behavior of doctors lacks comprehensive theoretical basis (Gonul et al., 2001; Manchanda & Honka, 2005; Theodorou et al., 2009; Vancelik et al., 2007; Khan & Ullah, 2021). A very few theoretical models that include attitude-behavior models like theory of reasoned action and the theory of planned behavior have been utilized to investigate research related to prescribing decisions. Subsequently, a comprehensive research study based on a sound theoretical approach is needed to be accomplished (Murshid & Mohaidin, 2017). Ajzen's (1991) theory of planned behavior is among the most appropriate and often used behavioral theory to study prescribing behavior of doctors. Eccles et al. (2012), and Godin et al. (2008) found in a meta-analysis conducted by them

that Ajzen's theory of planned behavior, in the context of medical care, established significant ability to predict physicians' prescribing behavior.

The current research study is based on Ajzen's theory of planned behavior and the main base of the study is to develop a simple framework in order to investigate the impact of various kind of marketing and promotional tools and techniques employed by pharmaceutical organizations on the prescribing behavior of oncologists. In this particular research study, the framework also includes the intervening effect of behavioral intention on the relationship between the factors of perceived behavioral control, that is, drug characteristics and physician habit persistent and the prescribing behavior of oncologists, hence making it a unique study as no previous study based on the Ajzen's theory of planned behavior has been accomplished by taking behavioral intention as an intervening (mediating) variable.

Problem Statement

The physician role is vital in the treatment of the patients. However, when it comes to oncologists, the patient's recovery becomes the foremost important. Apart from the knowledge and expertise of the oncologist, right prescription for the treatment on the other hand may lead to proper treatment of the patient. The right prescription of medical drugs is influenced by what appropriate information is available to the oncologist about a particular drug for the treatment. Such information is provided by the Medical Representatives (MR) of the respective pharmaceutical companies to the concerned oncologist by addressing all the appropriate queries of the oncologists about the drug (Capella et al., 2009).

In order to enhance the sale targets of their specified products, and to remain competitive in the market for maximum profit generation, the companies follow some approaches for the purpose. Pharmaceutical companies use advertisements about their drugs for the general information of physicians. While, MRs also use to influence the physician for prescribing the desirable drug. These approaches are in lines of the policy of the concerned pharmaceutical companies to be followed by the MRs and may include unique gifts, some financial incentives, sponsoring foreign visits, etc. it has been reported that such promotional activities by MRs has significant impact on physician to prescribe the desirable drug to the patients (Datta & Dave, 2017; Khan & Ullah, 2021; Mcgettigan et al., 2001). The irrational prescriptions by the physicians become the result of such practices, which may not be in the interest of the patients both medically and economically and considered as unethical approach (Agarwal & Kaur, 2017). However, behavior and conduct of the physicians concerning the accepting gifts from MRs also play an important role. Their intentions are transformed into expectations from the MRs to provide incentives else they will be deprived of their due promotional sale share. MRs' effectiveness as his attitude also determines behavioral intentions of the physicians. Furthermore, it is also observable that promotional tools have an important role on the behavioral intention of the physician. Patient expectations are usually ignored in such situation. Drug characteristics and physician's habitual persistence on demanding such incentives and has also not been properly examined. At the expense of patients' well-being, irrational promotion of medicinal products has taken an acceptable standard by both pharma companies and physicians in Pakistan. Hence, there exists a gap with regard to all the factors highlighted above to study the decision-making patterns of Oncologists in Pakistan.

Research Objectives

Objective 1: To examine the impact of attitude toward the behavior, on behavioral intention of Oncologists.

Objective 2: To examine the impact of subjective norm, on behavioral intention of Oncologists.

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Objective 3: To examine the impact of perceived behavioral control, on behavioral intention of Oncologists.

Objective 4: To examine the impact of behavioral intention on prescribing behavior of Oncologists.

Objective 5: To determine the mediating effect of behavioral intention between drugs' characteristics, as a part of perceived behavioral control, and prescribing behavior of Oncologists.

Objective 6: To determine the mediating effect of behavioral intention between physicians' habit persistence, as a part of perceived behavioral control, and prescribing behavior of Oncologists.

Significance of the Study

The main focus of this research study is the prescribing behavior of oncologists in the relationship with the marketing practices of pharmaceutical companies in Pakistan. This study is important from the perspective of both the pharmaceutical companies and public policymakers.

Pharmaceutical companies, both national and multinational, are expending huge amount on the promotions of their products by influencing prescribing behavior of physicians to get prescriptions in return. Despite the enormous expenditures, these companies face big challenges as competition is also very strong. In the segment of oncology where cost of treatment is very high as compared to other healthcare specialties, and good return on investment in shape of net profits, the pharmaceutical companies operating in this segment like to invest more to influence prescribing behavior of oncologists. The policy-making marketing managers of pharmaceutical companies operating in Pakistan need to have sound knowledge of decision-making behavior of oncologists so that they device and focus efficient marketing and promotional strategies. Hence, the pharmaceutical firms might optimize its promotional expenditures better than competitors and enhance its market share with lower marketing resources. This research will also facilitate public policymakers in establishing guidelines for the physicians and pharmaceutical companies. These guidelines will help limit unethical promotion practices done by pharmaceutical companies and irrational prescribing decisions made by doctors.

Literature Review

Review of literature plays an important role in finding the contributions made by researchers and scholars in the same area chosen by a researcher. A review of literature would be carried out judgmentally to search the gap in the prevailing information that an investigator might address and more importantly, it can contribute to the field of knowledge. A review of literature facilitates the scholars and researchers in crafting theoretical framework, objectives, research questions, and subsequent methodology for the research. Hence, it is compulsory to conduct a comprehensive literature review before gathering and investigating data for the research study. An effort has been done to critically review the existing literature so that a gap can be filled in the existing knowledge relevant to behavioral intentions and prescribing behaviors of Oncologists by validating the theory of planned behavior.

To produce the most appropriate and good quality review of literature, certain parameters were set. By taking the help of ISI web of knowledge as well as Google Scholar databases, research articles and papers were searched and obtained by using the key words prescribing behavior of doctors, behavioral intentions of doctors, medical representatives of pharmaceutical companies and theory of planned behavior. Also, relevant books were also examined for the review of literature.

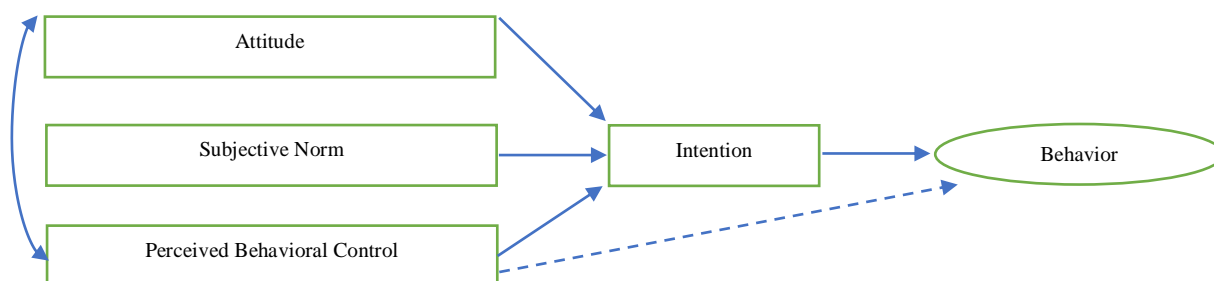
The Theory of Planned Behaviour (TPB)

The theory of planned behavior (Ajzen, 1991) was progressed from the theory of reasoned action (Fishbein, 1967) to predict the actual behavior of people under their control. Theory of

reasoned action states that the central element to determine individuals' behavior are behavioral intentions. An addition to the theory of reasoned action was an important element, perceived behavioral control, that helps in describing an individual's perception of control to act or not to act, which led to the theory of planned behavior. Icek Ajzen emphasized that most significant and instantaneous predictor for a decision to perform or not to perform a certain action is actually one's behavioral intention.

In addition to attitudes and subjective norms, the revised theory considers the influence of perceived behavioural control (PBC) on intentions and actual behaviour. Further, he added that the theory of planned behavior can be fragmented into three conceptually independent antecedents that lead to behavioral intention to act are: Attitude towards the behavior, Subject norm, and Perceived behavioral control. Attitude toward the behavior measures the extent to which a person has an undesirable or optimistic evaluation toward his/her performance of the behavior. Subjective norm refers to what people believe other important people in their lives think about whether or not the individual should perform the behavior. Perceived behavioral control refers to people's perceptions of whether or not they can perform that definite behavior and how relaxed it is to act. The beauty of this theory is that it is extensively relevant to a variety of behavior in diverse contexts such as health, technology implementation, environmental problems, etc. As a matter of fact, when a theory is practiced and used more, it is readily accepted by the scientific communal more. Likewise, the model of planned behavior has been used significantly during the last ten years with over fifteen hundred publications. Broadly speaking, this theory is well-supported with observed, data-based evidence, and intentions to accomplish behaviors of many types can be forecasted with greater precision. Overall, findings of previous and more recent meta-analyses of the TPB provide strong evidence for the utility of this model in predicting social behaviours.

Figure: The Theory of Planned Behavior (Ajzen, 1991)



This research study is based on theory of planned behavior model proposed by Icek Ajzen (1991) which explicates and checks the ability of attitude toward the behavior, subjective norm and perceived behavioral control to predict behavioral intention and prescribing behavior of physicians.

Attitude

Attitude narrates the extent of likeness or dialkenes for something that can be result into the tendency or behavior to response in a particular way (Ajzen, 1991). To be exact, attitude is the degree to which as doctor possesses favorable or unfavorable attitude in response to marketing activities done by pharmaceutical companies and its impact on his or her prescribing. Godin et al. (2008) highlighted that the attitude of physicians in response to the promotional activities by pharmaceutical firms will determine their prescribing behavior. He further explained that attitude may be measured as the extent at doctors approve of four key antecedents, that is, medical representatives' effectiveness, promotional tools, information related to brands and specific brand of

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

a medicinal product. Hence, the researcher, based on more importance and relevancy, took two factors, that is, medical representatives' effectiveness and promotional tools as main antecedents (or parts) of attitude toward the behavior among the four factors suggested by Godin et al. (2008).

Medical Representatives Effectiveness (MRE)

Allsageer and Kowalski (2012) highlighted that one of the most expensive and extensively used promotional tools among all the marketing practices employed by the pharmaceutical companies are the medical representatives. Medical representative of a pharmaceutical firm is defined as an employee who frequently visits doctors to deliver information about his or her company's products. An efficacious medical representative with higher sales achievement dominates his or her territory and has a capability to sustain customers. Hussain et al. (2016) stated that medical sales force is the most operative and proficient resources to persuade doctors to recommend medications. Regular reminders by medical representatives' supports in establishing associations with physicians which ultimately results in amplified prescriptions that ultimately results into grater profit and bigger market share. Consistent contacts with physicians by medical representatives are of vital significance as these interfaces facilitate physicians recall names of brands. In this way they get good number of prescriptions.

Hypotheses Development (H_1): *Medical Representatives' Effectiveness, as a part of Attitude toward the Behavior, and Behavioral Intention.*

Based on the previous research studies conducted by Gallan (2004), Kyle et al. (2008), Raisch (1990), Stros and Lee (2015), and Singh (2008) it is evident that there exists significant constructive relationship between Medical Representatives' Effectiveness and the Behavioral Intention. Therefore, the aforementioned literature led to the following hypothesis explains the proposed relationship between Medical Representatives' Effectiveness and the Behavioral Intention. *Hypothesis 1.* Medical Representatives' Effectiveness, as a part of attitude toward the behavior, has a significant effect on Behavioral Intention.

Promotional Tools (PT)

Umar (2019) highlighted that pharmaceuticals uses promotional tools like gifts including money, conferences/trips (local, abroad), entertaining events on doctors in order to lift brand image as well as sales figures to achieve sales budgets. Pharmaceutical companies finance a lot in the promotion of their products and applies complex tactics and promotional plans to boost selling of its brands. Agarwal and Kaur (2017) stated that promotional tools like monetary motivations in the shape of gifts, support for academic conferences, research funding, etc. are employed by pharmaceutical companies to promote their products to the doctors which might exaggeratedly influence their prescribing behaviours and possibly lead to irrational prescribing of drugs which might not be in the best welfares of their patients. Mikhael and Alhilali (2014) pointed out that offering gifts that range from stationary items to household and local as well as abroad sponsorships to attend seminars and/or conferences are among the tools that are widely used by the pharmaceutical firms in order to motivate doctors to recommend prescriptions. Reception of such gifts, specifically the exclusive ones, indulges them to reappearance favour by altering recognized prescription norms. Such practices are common in low- and middle-income countries, where supervision and monitoring of the pharmaceutical industries are not strong.

Hypotheses Development (H_2): *Promotional Tools, as a part of Attitude toward the Behavior, and Behavioral Intention.*

Based on the previous research studies conducted by Gallan (2004), Kyle et al. (2008), Raisch (1990), Stros and Lee (2015), and Singh (2008) it is evident that there exists significant constructive relationship between Promotional Tools and the Behavioral Intention. Upon the above-stated literature review, the underneath hypothesis explains the relationship between Promotional Tools (PT), as a part of Attitude toward the Behavior, and Behavioral Intention (BI).

Hypothesis 2. Promotional Tools, as a part of attitude toward the behavior, has a significant effect on Behavioral Intention.

Subjective Norm

The influence of peers as well as supplementary social sets like colleagues, friends and families on a person's behavior is termed as subjective norm, the second element inside the framework of the theory of planned behavior. According to the meta-analysis conducted by Kyle et al. (2008), the prescribing behavior can be evident by social pressures like patients' expectations, pharmacist expert power or in other words, the peers' influence, demands of specific brand of a medicinal product by patient and collaboration by physician and pharmacist. Hence, the researcher, based on more importance and relevancy, took two factors, that is, patients' expectations and peers' influence as main antecedents (or parts) of subjective norm among the four factors suggested by the author.

Patients Expectations (PE)

Levenstein et al. (1989) defined patients' expectations as "a person's specified reason for the inspection relating a symptom or a worry, for which is expected an acknowledgement or a feedback from the doctor." An expectation can be articulated in the form of a statement, a query or a request for a particular service. Following this, expectations of patients are defined in relation to their requests, needs or wants prior meetings with their doctors. According to the healthcare point of view, expectations refer to the belief or the anticipation what is to be come across in the healthcare system or in a consultation with a physician. More precisely, it is actually a psychological imagination which a common person or a patient might have of the process of interface with the healthcare system. Patients visit their physicians with expectations about what they may or may not be obviously aware of. Such expectation can clearly be presented or the doctor might attempt to explore them. Understanding and dealing with patients' expectations can enhance their satisfaction (Lateef, 2011).

Hypotheses Development (H_3): *Patients' Expectations, as a part of Subjective Norm, and Behavioral Intention.*

Based on the previous research studies conducted by Gallan (2004), Raisch (1990), and Singh (2008) it is evident that there exists significant constructive relationship between Patients' Expectations and the Behavioral Intention. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Patients' Expectations, as a part of Subjective Norm, and Behavioral Intention (BI).

Hypothesis 3. Patients' Expectations, as a part of subjective norm, has a significant effect on Behavioral Intention.

Peers Influence (PI)

Buechel et al. (2018) highlighted that peers could influence folks by a number of social mechanisms that include peer pressure, social norms and higher aspirations. The pertinent literature proposes that peers employ their influence through these channels when they serve as a commitment device imposing some social cost on a person whom they observe.

Hypotheses Development (H_4): *Peers' Influence, as a part of Subjective Norm, and Behavioral Intention.*

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Based on the previous research studies conducted by Gallan (2004), Raisch (1990), Stros and Lee (2015), and Singh (2008) it is evident that there exists significant constructive relationship between Peers' Influence and the Behavioral Intention. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Peers' Influence, as a part of Subjective Norm, and Behavioral Intention (BI).

Hypothesis 4. Peers' Influence, as a part of subjective norm, has a significant effect on Behavioral Intention.

Perceived Behavioral Control (PBC)

Perceived behavioral control, which is a third factor inside the framework of the theory of planned behavior, suggests a doctor's perception of the amount to which performance of the behaviour is easy or tough (Godin et al., 2008). Perceived behavioral control PBC is credited to the existence the variables that may simplify or hamper the transformation of the behaviour, for example, prescribing behavior of the doctors. According to the findings of the Kyle et al. (2008), such factor can be by circumstantial like drugs' characteristics, physicians' habit persistence, cost and benefit ratio of a medicinal product and characteristics of patients thus affecting the prescribing patterns of doctors. Hence, the researcher, based on more importance and relevancy, took two factors, that is, drugs' characteristics and physicians' habit persistence as main antecedents (or parts) of perceived behavioral among the elements suggested by Kyle et al. (2008).

Drugs' Characteristics (DC)

Waheed (2011) highlighted that physicians manufacture viewpoint regarding the quality of the drug based on the results they obtain through recommended treatments. If the product is found to be functional then physicians prescribe the recommended product again and again in treating diseases in upcoming patients. Dunk (2002) described product quality is considered as a main element of competitive edge so the improvement of product quality has been a subject of most importance to companies because quality gives a foundation to strategic advantage and therefore improved performance may be based on refined product quality. Noteworthy studies in the field of marketing supports fact that consumers, based on the results they get from the product due to its supreme quality, prefers to repurchase repeatedly it through the same provider (Kennedy et al., 2001). Burmann et al. (2008) explained that one can determine consumer's behavior by brand image because it affects their purchasing manners. Thakor (2006) in his research paper cited that supreme image of a brand may be thought as innate traits and has a special link to the brand identity model. Vazquez-Carrasco and Foxall (2006) also found that collective, convinced and exceptional image of brand positively influence consumer's loyalty intent.

Hypotheses Development (H_5): *Drugs' Characteristics, as a part of Perceived Behavioral Control, and Behavioral Intention.*

Based on the previous research studies conducted by Gallan (2004), Kyle et al. (2008), Stros and Lee (2015), and Raisch (1990) it is evident that there exists significant constructive relationship between Drugs' Characteristics and the Behavioral Intention. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Drugs' Characteristics (DC), as a part of Perceived Behavioral Control, and Behavioral Intention (BI).

Hypothesis 5. Drugs' Characteristics, as a part of perceived behavioral control, has a significant effect on Behavioral Intention.

Physicians' Habit Persistence (PHP)

Habit persistence is actually the predisposition of the physician to recommend the same brand of a medicinal drug for his or her patients irrespective of discrete profiles of all patients (Kariuki, 2020). Habit persistence, one of the key characteristics of physicians' decision making, has recently caught the consideration of researchers. Earlier investigations in the health and economics literature has certainly recommended that doctors are "creatures of habit" because they display persistence while recommending prescriptions to their patients (Alexander & Tseng, 2004). Mergelsberg et al. (2020) found in their research study, an invention designed to investigate habit formation in a novel health behavior, that habit, intention and behavior has been the most significant predictors of change in behavior and habit formation preservation. They also highlighted that habit persistence is crucial in improving health interventions.

Hypotheses Development (H_6): *Physicians' Habit Persistence, as a part of Perceived Behavioral Control, and Behavioral Intention.*

Based on the previous research studies conducted by Gallan (2004), Stros and Lee (2015), and Kyle et al. (2008) it is evident that there exists significant constructive relationship between Physicians' Habit Persistence and the Behavioral Intention. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Physicians' Habit Persistence (PHP), as a part of Perceived Behavioral Control, and Behavioral Intention (BI).

Hypothesis 6: Physicians' Habit Persistence, as a part of perceived behavioral control, has a significant effect on Behavioral Intention.

Behavioral Intention (BI)

Conner and Armitage (1998) explained that behavioral intention is actually a proxy measure of behavior. Motivation of an individual in the sense of her/his conscious decision or plan to perform certain behavior is actually represented by the behavioral intention. More precisely, the stronger the intention is, the more likely the behavior will be performed.

Hypotheses Development (H_7): *Behavioral Intention and Prescribing Behavior.*

Based on the previous research studies conducted by Liu et al. (2019), Ponnet et al. (2014), Rashidian and Russell (2012), Wiedyaningsih et al. (2016), and Zhou et al. (2019) it is evident that there exists significant constructive relationship between Behavioral Intention and Prescribing Behavior. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Behavioral Intention (BI) and Prescribing Behavior (PB).

Hypothesis 7: Behavioral Intention has a significant effect on Prescribing Behavior.

Hypotheses Development (H_8): *Drugs' Characteristics, as a part of Perceived Behavioral Control, and Prescribing Behavior.*

Based on the previous research studies conducted by Gallan (2004), Kyle et al. (2008), Raisch (1990), Stros and Lee (2015), and Singh (2008) it is evident that there exists significant constructive direct relationship between Drugs' Characteristics and Prescribing Behavior. Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Drugs' Characteristics (DC) and Prescribing Behavior (PB).

Hypothesis 8: Drugs' Characteristics, as a part of perceived behavioral control, has a direct significant effect on Prescribing Behavior.

Hypotheses Development (H_9): *Physicians' Habit Persistence, as a part of Perceived Behavioral Control, and Prescribing Behavior.*

Based on the previous research studies conducted by Gallan (2004), Kyle et al. (2008), Raisch (1990), Stros and Lee (2015), and Singh (2008) it is evident that there exists significant constructive direct relationship between Physicians' Habit Persistence and Prescribing Behavior.

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Therefore, based on the above-stated literature review, the underneath hypothesis explains the relationship between Physicians' Habit Persistence (PHP) and Prescribing Behavior (PB).

Hypothesis 9: Physicians' Habit Persistence, as a part of perceived behavioral control, has a direct significant effect on Prescribing Behavior.

Behavioral Intention as a Mediator

Ajzen (1991), in his inspiring article in which the theory of planned behavior was introduced by him, he admitted that this theory is "open to the addition of supplementary predictors if it can be shown that they capture a significant proportion of the variance in intention or behaviour after the theory's current variables have been taken into account". To support more, many researchers have suggested for the expansions of theories for the extending their predictive power and for the enhancements in their effectiveness in illumination and altering behavior (Armitage & Conner, 2001; Conner & Armitage, 1998; Landridge et al., 2007). Hence, in this research study, after a thorough review of literature, the researcher extended the model of the theory of planned behavior by taking behavioral intention as a mediator between drugs' characteristics and physicians' habit persistence as two antecedents of the perceived behavioral control and the dependent variable, prescribing behavior of the Oncologists.

Hypotheses Development (H_{10}) and (H_{11}): Mediating Role of Behavioral Intention between Drugs' Characteristics and Physicians' Habit Persistence and Prescribing Behavior.

As this had already been discussed by providing the justification, that the researcher extended model of the theory of planned behavior by taking behavioral intention as a mediator between drugs' characteristics and physicians' habit persistence as two antecedents of the perceived behavioral control and the dependent variable, prescribing behavior of the Oncologists. Since there is not any research study conducted by taking the Behavioral Intention as the mediator between perceived behavioral control and the behavior, therefore for the current research study, the following hypotheses have been given by the researcher

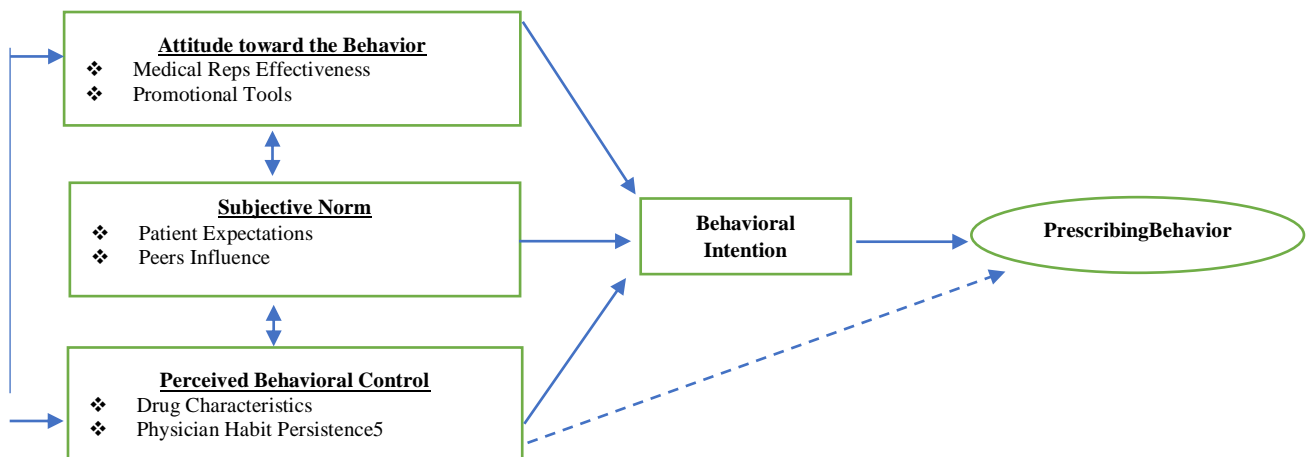
Hypothesis 10: Behavioral Intentions significantly mediate the relationship between Drugs' Characteristics, as a part of perceived behavioral control, and Prescribing Behavior.

Hypothesis 11: Physicians' Habit Persistence significantly mediate the relationship between Drugs' Characteristics, as a part of perceived behavioral control, and Prescribing Behavior.

Hence, the proposed model of the research study has been given below:

Proposed Model of the Study

Figure: Theoretical Framework of the Study



Research Methodology

This empirical, cross-sectional, survey based monomethod deductive approached study was carried out in the North region of Pakistan. Primary data was collected through a five-point Likert scale questionnaire and analyzed quantitatively with discussions on the results at the end. Simple random sampling method was administered to take data from a sample of 89 oncologists practicing in the North region of Pakistan in both private as well as public hospitals. Appropriate statistical tests were applied to the collected data. Statistical software such as STATA (version 15) and IBM SPSS (version 21) were used to analyze the data. Regression analysis and mediation analysis using Hayes (2013) and Sobel test (1982) were applied to find out the relationships between the variables. Diagnostic tests such as multicollinearity and heteroscedasticity were also performed to check whether or not data is suffering from such problems.

Data Analysis and Discussion

This chapter has been designed to analyse data and present the findings in order to examine the hypotheses of the current study. Statistical software STATA (Statistics/Data Analysis) version 15 and IBM Statistical Package for Social Sciences (SPSS) version 21 were utilized for the computations of the data being collected for the current study. In the current research study, descriptive statistics (frequency distributions and pie charts) were used to describe and summarize the data as it is very useful to make some general observations about the data collected. Inferential techniques including simple and multiple regression analysis, mediation analysis suggested by Hayes and the Sobel test were used to test for the hypotheses of the current study. Different diagnostic tests that included Multicollinearity and Heteroscedasticity, were also run to make sure the inferences drawn based on the collected data were accurate and unbiased. The purpose of this descriptive and inferential statistics is to determine the impact and relationships of explanatory variables with the outcome variable, Prescribing Behavior of the Oncologists in Pakistan and role of Behavioral Intention as a mediator between Drugs' Characteristics and Physicians' Habit Persistence, as parts of perceived behavioral control, and the dependent variable Prescribing Behavior.

Table: Summary of the Demographic Profile of the Respondents

	Description	Frequency	Percent
Gender	Male	60	67.4%
	Female	29	32.6%
	Total	89	100%
Employment Sector	Public Institute	62	69.7%
	Private Institute	27	30.3%
	Total	89	100%
Age	Below 31	3	3.4%
	31-40	33	37.1%
	41-50	28	31.5%
	51-60	14	15.7%
	61-70	11	12.4%
	Total	89	100%
	MBBS/MD	10	11.2%
	FCPS/MCPS	39	43.8%
	FRCP/MRCP	2	2.2%

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Qualification	MS/PhD	30	33.7%
	Other	8	9%
	Total	89	100%
Practicing Years	Up to 5	4	4.5%
	6-10	20	22.5%
	11-15	26	29.2%
	16-20	13	14.6%
	21-25	5	5.6%
	26-30	8	9%
	Above 30	13	14.6%
	Total	89	100%

Diagnostic Tests for the Fitted Models

Diagnostic tests were run to find out the problems of multicollinearity and heteroscedasticity. The overall findings showed that all models were suffering from heteroscedasticity, though free from high multicollinearity. To overcome the problem of heteroscedasticity, the researcher replaced ‘unknown δ_i^2 ’ by its proxy ‘ \hat{u}_i^2 ’ in the expression for variances (and standard errors) of the OLS estimators, as suggested by White (1980). The obtained standard errors are called “Robust Standard Errors”. The model remains the same as before heteroscedasticity procedure, but for inferences, that is, hypothesis testing (significance), these robust standard errors are used. The results for t -statistic are based on robust standard errors instead of standard errors. Now the model is called “heteroscedasticity-corrected” model. After this procedure, the model is now free from consequences or problem of heteroscedasticity.

Regression Analysis for the Study

Data was analyzed using STATA (Statistical/Data Analysis) version 15. In order to analyze the association between the variables as well as to verify the hypotheses, multiple regression analysis was carried out.

Mediation Analysis

In order to find out the mediating role of Behavioral Intention between the explanatory variables, Drugs’ Characteristics and Physicians’ Habit Persistence, as part of perceived behavioral control, and the dependent variable, Prescribing Behavior, we used Hayes Process Marco and Sobel test individually for both explanatory variables.

Summary of Hypotheses

To conclude results of hypotheses, summary has been given below in the table.

Table: Summary of Hypotheses

Hypotheses Description		$\hat{\beta}$ values	t value	Sig. (p value)	Result
H_1	The impact of MRE on BI	0.21	4.72	0.000	Accepted
H_2	The impact of PT on BI	0.17	5.09	0.000	Accepted
H_3	The impact of PE on BI	0.004	0.12	0.905	Rejected
H_4	The impact of PI on BI	0.19	5.30	0.000	Accepted
H_5	The impact of DC on BI	0.27	2.97	0.004	Accepted

H_6	The impact of PHP on BI	0.76	4.04	0.000	Accepted
H_7	The impact of BI on PB	0.69	6.86	0.000	Accepted
H_8	The direct impact of DC on PB	0.40	2.76	0.007	Accepted
H_9	The direct impact of PHP on PB	0.65	3.39	0.001	Accepted
H_{10}	Mediation of BI between DC and PB (Sobel Test)		2.78 (z)	0.0055	Accepted
H_{11}	Mediation of BI between PHP and PB (Sobel Test)		3.21 (z)	0.0013	Accepted

Discussion of Results

Hypothesis 1: *Medical Representatives' Effectiveness, as a part of attitude toward the behavior, has a significant effect on Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_1$) is 0.21 which means, on average, 21% change in the Behavioral Intention is due to a unit change in the Medical Representatives' Effectiveness. Here, the value of t is 4.72 with a p -value 0.000. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the first hypothesis of the study verified the significant impact of Medical Representatives' Effectiveness, as a part of attitude toward the behavior, on the Behavioral Intention of the Oncologists. So, there is significant positive relationship between Medical Representatives' Effectiveness, as a part of attitude toward the behavior, and Behavioral Intention. Subsequently, hypothesis 1 (H_1) is accepted.

Hypothesis 2: *Promotional Tools, as a part of attitude toward the behavior, has a significant effect on the Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_2$) is 0.17 which means, on average, 17% change in the Behavioral Intention is due to a unit change in the Promotional Tools. Here, the value of t is 5.09 with a p -value 0.000. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the second hypothesis of the study verified the significant impact of Promotional Tools, as a part of attitude toward the behavior, on the Behavioral Intention of the Oncologists. So, there is significant positive relationship between Promotional Tools, as a part of attitude toward the behavior, and Behavioral Intention. Subsequently, hypothesis 2 (H_2) is accepted.

Hypothesis 3: *Patients' Expectations, as a part of subjective norm, has a significant effect on the Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_3$) is 0.004 which means, on average, 0.4% change in the Behavioral Intention is due to a unit change in the Patients' Expectations. Here, the value of t is 0.12 with a p -value 0.905. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Consequently, the third hypothesis of the study verified the insignificant impact of Patients' Expectations, as a part of subjective norm, on the Behavioral Intention of the Oncologists. The result show that Behavioral Intention is not influenced by Patients' Expectations, as a part of subjective norm. So, there is not significant relationship between Patients' Expectations, as a part of subjective norm, and Behavioral Intention. Consequently, hypothesis 3 (H_3) is rejected. The possible reason behind the rejection of this hypothesis is that the oncologists do not ask the patient that what kind of medication can be recommended.

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Hypothesis 4: *Peers' Influence, as a part of subjective norm, has a significant effect on the, Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_4$) is 0.19 which means, on average, 19% change in the Behavioral Intention is due to a unit change in the Peers' Influence. Here, the value of t is 5.30 with a p -value 0.000. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the fourth hypothesis of the study verified the significant impact of Peers' Influence, as a part of subjective norm, on the Behavioral Intention of the Oncologists. So, there is significant positive relationship between Peers' Influence, as a part of subjective norm, and Behavioral Intention. Subsequently, hypothesis 4 (H_4) is accepted.

Hypothesis 5: *Drugs' Characteristics, as a part of perceived behavioral control, has a significant effect on the Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_5$) is 0.27 which means, on average, 27% change in the Behavioral Intention is due to a unit change in the Drugs' Characteristics. Here, the value of t is 2.97 with a p -value 0.004. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the fifth hypothesis of the study verified the significant impact of Drugs' Characteristics, as a part of perceived behavioral control, on the Behavioral Intention of the Oncologists. So, there is significant positive relationship between Drugs' Characteristics, as a part of perceived behavioral control, and Behavioral Intention. Subsequently, hypothesis 5 (H_5) is accepted.

Hypothesis 6: *Physicians' Habit Persistence, as a part of perceived behavioral control, has a significant effect on the Behavioral Intention of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_6$) is 0.76 which means, on average, 76% change in the Behavioral Intention is due to a unit change in the Drugs' Characteristics. Here, the value of t is 4.04 with a p -value 0.000. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the sixth hypothesis of the study verified the significant impact of Physicians' Habit Persistence, as a part of perceived behavioral control, on the Behavioral Intention of the Oncologists. So, there is significant positive relationship between Physicians' Habit Persistence, as a part of perceived behavioral control, and Behavioral Intention. Subsequently, hypothesis 6 (H_6) is accepted.

Hypothesis 7: *Behavioral Intentions has a significant effect on the Prescribing Behavior of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_7$) is 0.69 which means, on average, 69% change in the Prescribing Behavior is due to a unit change in the Behavioral Intention. Here, the value of t is 6.86 with a p -value 0.000. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. Therefore, the seventh hypothesis of the study verified the significant impact of Behavioral Intention on the Prescribing Behavior of the Oncologists. So, there is significant positive relationship between Behavioral Intention and Prescribing Behavior. Subsequently, hypothesis 7 (H_7) is accepted.

Hypothesis 8: *Drugs' Characteristics, as a part of perceived behavioral control, has a direct significant effect on the Prescribing Behavior of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_8$) is 0.40 which means, on average, 40% change in the Prescribing Behavior is due to a unit change in the Drugs' Characteristics, as a part of attitude toward the behavior. Here, the value of t is 2.76 with a p -value 0.007. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. The result show that Prescribing Behavior is influenced directly by Drugs' Characteristics, as a part of attitude toward the behavior. So, there is significant positive relationship between Drugs' Characteristics, as a part of attitude toward the behavior, and Prescribing Behavior. Subsequently, hypothesis 8 (H_8) is accepted.

Hypothesis 9: *Physicians' Habit Persistence, as a part of perceived behavioral control, has a direct significant effect on the Prescribing Behavior of the Oncologists.*

The slope-coefficient represents variation in the outcome variable caused by the variation in the explanatory variable. Here, the value of the slope-coefficient ($\hat{\beta}_9$) 0.65 which means, on average, 65% change in the Prescribing Behavior is due to a unit change in the Behavioral Intention. Here, the value of t is 3.39 with a p -value 0.001. A p -value smaller than 0.05 leads to the acceptance of research hypothesis. The result show that Prescribing Behavior is influenced directly by Physicians' Habit Persistence, as a part of attitude toward the behavior. So, there is significant positive relationship between Physicians' Habit Persistence, as a part of attitude toward the behavior, and Prescribing Behavior. Subsequently, hypothesis 9 (H_9) is accepted.

Mediation Analysis

In order to find out the mediating role of Behavioral Intention between the explanatory variables, Drugs' Characteristics and Physicians' Habit Persistence, as part of perceived behavioral control, and the dependent variable, Prescribing Behavior, the researcher used Hayes Process Marco and Sobel test individually for both explanatory variables.

Table: Results for Hypothesis 10

Description	Effect	SE	t	p	LLCI	ULCI
Total effect of X on Y	0.4045	0.1466	2.7588	0.0071	0.1131	0.6958
Direct effect of X on Y (in the presence of M)	0.1426	0.1271	1.1219	0.2650	-0.1101	0.3954
	Effect			Boot SE	Boot LLCI	Boot ULCI
Indirect effect of X on Y (BI)	0.2618			0.0790	0.1231	0.4418
	Effect	SE	z	p		
Normal theory tests for indirect effect (Sobel Test)	0.2618	0.0943	2.7771	0.0055		

Hypothesis 10: *Behavioral Intention significantly mediate the relationship between Drugs' Characteristics, as a part of perceived behavioral control, and Prescribing Behavior of the Oncologists.*

The findings display the total, direct and indirect effect of Drugs' Characteristics, as a part of perceived behavioral control, on Prescribing Behavior through Behavioral Intention. The estimates show that Drugs' Characteristics, as a part of perceived behavioral control, positively affects Prescribing Behavior with significant observed p -value 0.0071 which is less than 0.05. Drugs'

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

Characteristics, as a part of perceived behavioral control, do not affect Prescribing Behavior in the presence of the mediator, Behavioral Intention because the observed *p*-value is greater than 0.05.

The estimates also indicate that the indirect effect of Drugs' Characteristics, as a part of perceived behavioral control, is significant because the signs for both Bootstrap Lower Limit Confidence Interval and Boot Upper Limit Confidence Internal are positive (+) and no zero (null) lies within the interval which is another indication of significance. This shows that Behavioral Intention positively mediates the relationship between Drugs' Characteristics, as a part of perceived behavioral control, and Prescribing Behavior of Oncologists. The Sobel test also confirms this indirect effect with significant observed *p*-value 0.0055.

The above results provide a strong support for Hypothesis 10 showing that Drugs' Characteristics, as a part of perceived behavioral control, influence Behavioral Intention which further positively significantly affect Prescribing Behavior of Oncologists.

Table: Results for Hypothesis 11

Description	Effect	SE	<i>t</i>	<i>p</i>	LLCI	ULCI
Total effect of X on Y	0.6480	0.1914	3.3862	0.0011	0.2676	1.0284
Direct effect of X on Y(in the presence of M)	0.2434	0.1728	1.4088	0.1625	-0.1000	0.5868
	Effect			Boot SE	Boot LLCI	Boot ULCI
Indirect effect of X on Y (BI)	0.4046			0.1478	0.1102	0.7087
	Effect	SE	<i>z</i>	<i>p</i>		
Normal theory tests for indirect effect (Sobel Test)	0.4046	0.1260	3.2118	0.0013		

Hypothesis 11: *Behavioral Intention significantly mediate the relationship between Physicians' Habit Persistence, as a part of perceived behavioral control, and Prescribing Behavior of the Oncologists.*

The findings display the total, direct and indirect effect of Physicians' Habit Persistence, as a part of perceived behavioral control, on Prescribing Behavior through Behavioral Intention. The estimates show that Physicians' Habit Persistence, as a part of perceived behavioral control, positively affects Prescribing Behavior with significant observed *p*-value 0.0011 which is less than 0.05. Physicians' Habit Persistence, as a part of perceived behavioral control, do not affect Prescribing Behavior in the presence of the mediator, Behavioral Intention because the observed *p*-value is greater than 0.05.

The estimates also indicate that the indirect effect of Physicians' Habit Persistence, as a part of perceived behavioral control, is significant because the signs for both Bootstrap Lower Limit Confidence Interval and Boot Upper Limit Confidence Internal are positive (+) and no zero (null) lies within the interval which is another indication of significance. This shows that Behavioral Intention positively mediates the relationship between Physicians' Habit Persistence, as a part of perceived behavioral control, and Prescribing Behavior of Oncologists. The Sobel test also confirms this indirect effect with significant observed *p*-value 0.0013.

The above results provide a strong support for Hypothesis 11 showing that Physicians' Habit Persistence, as a part of perceived behavioral control, influence Behavioral Intention which further positively significantly affect Prescribing Behavior of Oncologists.

Conclusion and Recommendations

Conclusion

The current research work contributed in the existing frame of information since the findings through hypothesis testing procedures, except hypothesis (H_3) which was not supported in the context of Pakistan as physicians very often do not consider the expectations of patients and prescribe them medications based on their own clinical experiences, suggests that Ajzen's theory of planned behavior can be used successfully to explore the impact of marketing of pharmaceutical companies in Pakistan on the prescribing habits of Oncologists in particular and physicians/other healthcare professionals in general. Ten null hypotheses, out of eleven, were rejected; in other words, ten research hypotheses were accepted. The results of these hypotheses were consistent with previous cited literature.

The impact of Behavioral Intention was checked as an intervening variable on the relationship between Drugs' Characteristics and Prescribing Behavior, (H_{10}), and on the relationship between Physicians' Habit Persistence and Prescribing Behavior, (H_{11}). The results were found highly significant through Hayes and the Sobel tests. It means that Behavioral Intention plays significant part in prescribing habits of oncologists when it comes to decide on the basis of characteristics of drugs such as quality, image, price and place of availability of pharmaceutical products as well as physicians' past prescribing practices/habits. Hence all the objectives of the research study were accomplished.

To conclude, from the proposed mode of the current research study, it is evident that Ajzen's theory of planned behavior can be used efficiently to find out the impact of marketing practices of pharmaceutical organizations in the context of Pakistan. Also, Behavioral Intention plays significant part as a mediator in some part of the model to have an effect on the prescribing behavior of oncologists.

Recommendations for Policy and Practice

The recommendations, drawn in the light of the key findings of the present research work, it is expected that the stakeholders that include the top senior management of the pharmaceutical companies as well as the Government officials will gain a better understanding of the issues to be addressed in implementation of marketing strategies in response to the changing buyer behavior. The following are the key endorsements of the research work:

The findings of the research study suggest that Drug's Characteristics and Medical Representatives' Effectiveness are the most significant marketing strategies that can determine the prescribing behavior of oncologists. The study therefore recommends that the pharmaceutical companies should adopt efficient marketing strategies according to the changing prescribing behavior of physicians. Since the product quality is considered as the base of customer loyalty and therefore in current fast-moving era where increased market share, price and return on investment is positively significantly affected by product quality, pharmaceutical companies should concentrate on quality of the products. As a matter of fact, trust on brand substantially enhanced by image of a brand thus pharmaceuticals should focus on its competent marketing strategies so that a positive image of a brand may be created in the thoughts of customers. Since treatment of cancers is very much expensive all over the world, the affordability of the patients is very compromised. Physicians are also very much interested in the price of the products and their prescribing is often subject to the

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

price of the products. As a matter of fact, the therapeutic segment of Pakistan is chiefly an out-of-pocket market, in other words, spending on healthcare mainly come from citizens' personal savings. Government hospitals, however, provides free of cost or low-cost medications and treatments to the patients. It is therefore, suggested that pharmaceutical companies should device a best pricing strategy of the products. This will not only put a less-burden on patients' pockets but also help firms to gain an edge over the competitors by getting huge amount of prescriptions. Availability of the products, especially in oncology segment, is not less than a challenge. Usually, relevant medical stores which deals with anti-cancer medicines, sell those products to the patients on black prices which are not available due to shortages. This thing is only beneficial for the medical stores' owners; neither pharmaceutical companies nor patients get any benefit. It is therefore, suggested that pharmaceutical companies should device effective marketing strategies which can focus primarily on the sufficient availability of their anti-cancer medicines so that patients can get recommended products by oncologists without paying extra cost.

This is also for the kind attention of the government officials, especially the Drug Regulatory Authority of Pakistan and Health Department, that there is a huge difference in the MRP (market retail price) and offered price (to distributors and chemists) in the anti-cancer segment. As an example, the MRP of Inj. Docetaxel 80mg in Pakistan is Rs. 20,000 (and the trade price is 15% less, that is, Rs. 17,000), but the pharmaceutical companies (especially those manufacture/import generics) that deals in anti-cancer medicines sell this specific medicine to the distributors/chemists at the net rate of Rs. 3,000 to Rs. 5,000 (on average). Now this is the total discretion of the chemists to sell this product to the patients at what price since there is a huge amount of margin for them. It is therefore, suggested to the officials of DRAP and health department of Pakistan to look into this serious matter on prior basis, as this is one example among plenty. They must regulate the prices of the anti-cancer medicines and one suggestion is that except the originator of the brand, all other generic medicines must not be allocated the same market retail price. There must be a significant difference in the market retail price between the originator and the generic so that the end-users, that is, the cancer patients are not trapped by the chemists and distributors. The cancer patient is already depressed because of this lethal disease where the survival is very much compromised and overburden of cost of medicines badly affect his/her condition so this is a serious matter of humanity as well which demands a prompt action.

As far as the effectiveness of medical representatives is concerned, in the field of pharmaceuticals, the hypothetical equation of sales is considered as:

$$\text{Sales} = \text{Reach} \times \text{Frequency} \times \text{Impact}$$

where,

Sales refers to the sales of pharmaceutical products. Target customers, like physicians, do practice in either public or private institutions and most often, do their evening practices in their private clinics. Medical representatives of the companies identify their visit timings and go there to meet them; this refers to as **Reach**. In the same equation, **Frequency** means a number of times a consultant allows visits to medical representatives in a month and hence they go to meet the consultant. Now what is **Impact**? In the opinion of the researcher, the most important element in the equation of sales is **Impact**. Impact covers:

- A. Corporate Image
- B. Brand Image
- C. Medical Representatives' Effectiveness, that consist of:

1. Personality of the Medical Representative
2. Communication Skills of the Medical Representative
3. Knowledge of the Medical Representative, which is basically:
 - Territory Knowledge
 - Customer Knowledge
 - Product Knowledge
 - Competitors' Knowledge

The corporate image, no doubt, plays a significant role in changing prescribing behavior of physicians as they like to recommend the products of those firms which have got good reputation in the pharmaceuticals market. Brand image, on the other hand, also has got great importance as good reputation enhances customer purchase behavior and significantly impacts customer long term loyalty. But the main element of the sales equation, effectiveness of medical representatives plays the most significant part. As Wazana (2000) supports this claim by finding out in his research study that contact of physicians with medical sales representatives of pharmaceutical companies still has substantial influence on their prescribing behaviors. As this can be seen in the equations of sales that each and every element is of pivotal importance as all elements are multiplying with each other and as per rules of mathematics, if any component equals to zero, whole equation will equate to null. Most often, despite the reach and regular follow-ups by medical reps, sales of products do not get boosted and reason is the ignorance or lack of the most important factor called “**Impact**” in the equation of sales.

Hence, it is suggested to senior executives of pharmaceutical companies that since specialist physicians like oncologists, cardiologists, hematologists, etc. rely more on the information provided by the medical representatives of specialty segments as compared to primary care representatives, pharmaceutical companies should provide appropriate trainings to their specialty medical sales representatives so that they should be able to provide transparent, comprehensible and supportable information regarding their products to doctors. Not only their own products' knowledge, sales reps must be provided adequate trainings regarding their competitors' so that they can compete with their competitors in a healthy way. Beside basic product trainings, medical representatives must be provided supportive short courses like advanced selling skills, effective communication and presentation skills, and other professional courses to shine their skills in order to maintain and create more and more loyal customers. Also, they must be trained to demonstrate a healthy ethical behavior while meeting their customers. Since, oncologists are very much educated and knowledgeable and in order to convince them, more knowledgeable, skilful and decent sales medical representatives are needed. Therefore, pharmaceutical organizations must hire and promote sales representatives purely on merit, not by liking and disliking and on the references. In order to conclude the equation of sales, it is also suggested by the researcher to policy makers of pharmaceuticals that they must consider this equation while formulating marketing strategies. This will surely help them in bringing best return-on-investment.

In Pakistan, unfortunately, despite the fact that there is sufficient evidence that irrational pharmacotherapy is progressively come across due to unethical marketing practices of pharmaceutical companies, there is no right mechanism to monitor such campaigns run by the pharmaceutical industry and as a matter of fact, it is the patient who pay for all the expenses of pharmaceutical industry. Therefore, it is must to establish ethical guidelines, both for healthcare professionals and the pharmaceutical companies.

Last but not the least, another very important issue that needs to be bring into the kind consideration of competent government authorities that in the government hospitals of Peshawar,

Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

especially Lady Reading Hospital, Khyber Teaching Hospital and Hayatabad Medical Complex, the official entrance and working of pharmaceuticals sales forces are prohibited and when they are caught by the resident POLICE and security officials, are dealt very much disgracefully and sometimes are imprisoned in the jail as if they are criminals. Actually, this order was given by the ex-Chief Justice of High Court Peshawar almost a decade ago which is still implemented and real reason is unknown. As a matter of fact, people working in this White-Collar jobsegment are welleducated and this profession has given them handsome job and a means of earnings for their families. Majority of the sales reps belong to poor-to-middle class families and join pharmaceuticals because they cannot get job in the public sector due to many reasons. There are more than 650 pharmaceuticals companies operating in Pakistan and have employed thousands of young individuals. Due to working strictness in these hospitals, they cannot perform their duties well and sometimes get fired from their job because they cannot meet their targets since pharmaceutical sector is a commercial segment and there is not any job security as compared to public sector. Also, medical representatives and the pharmaceutical companies donate huge amount in the shape of services we well as funds for the well-being of patients such as free-of-cost drug samples, renovate wards and sitting areas for the patients; provide water-dispensers and air conditioners as well as stationary items such as patient/OPD/clinic files etc. in bulk; provide good discount on products of their respective portfolios; do participate in hospital tenders and offer best rates for the patients and many other things which are sponsored/supported by the sales teams/pharmaceutical companies. Government officials can do a case study and compare the odds and benefits of these pharmaceutical companies. In order to overcome and lessen this issue, one suggestion by the researcher is that, medical representatives may be allowed to enter and work in the hospitals on designated days and specific time in a week, for example, four days in a week from 12 to 2 pm. Usually in this period of time, flow of patients become relatively less and doctors can meet medical reps without any significant interruptions. This is very much realistic that without the support and help of pharmaceutical companies, best and affording treatment of patients is not possible and especially in the specialty segments like oncology, cardiology, hematology, hepatology, etc.

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Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

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Marketing Practices of Pharmaceutical Companies in Relationship with Decision-Making Patterns of Oncologists: An Intervening Role of Behavioral Intention

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