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Interpersonal Dynamics in Pharmaceutical Marketing: Understanding the Influence on Doctor Prescription Patterns in Developing Countries

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ABSTRACT

By integrating insights from Theory of interpersonal Behavior, this study underscores the significance of interpersonal factors in shaping physician prescribing behavior within the pharmaceutical marketing landscape. The aim of this study was to find out the effect of promotional tools, personal selling and direct marketing among physicians. A cross-sectional study, based on 5 point likert scale, sample size was 550. Unit analysis was physicians. Numerous tests have been performed to determine the impact of promotional tools on physician prescribing decisions. The study found that the effect of direct marketing, promotional tools on physician's habit persistence are significant. Further, direct marketing and physician's habit persistence are significant. Mediating effect of physician's habit persistence between direct marketing and physician's prescription behavior is significant and mediating effect of physician's habit persistence between promotional tools and physician's prescription behavior is significant.

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Introduction

The multinational pharmaceutical sector is one of the most powerful guiding factors and leading actors in the emerging global economy, with annual sales of about one trillion dollars. The selling of prescription drugs is special. Since the physician is the one who determines which medication

a customer can buy, marketing campaigns are mostly focused on changing the physician's decision (Kim and King 2009). Since prescription medications are the pharmaceutical industry's main source of sales (Junior Ladeira, Dalmoro et al. 2011), advertisement practices for prescription medicines have obtained the most coverage (Kim and King 2009). As a result, physicians are the most important actors in medicine ads since they decide the medications that would be utilized by the consumer. As a result, the attention is on the doctors rather than the patients. Pharmaceutical company advertisements to doctors, according to Datta and Dave (2017), have a strong impact on drug decisions and prescriptions written for a specific drug. As a result, secondary research outlets such as medical journals and formularies do not seem to be commonly used by doctors. Instead, sales packets, business medical representatives (MRs) through funded seminars are the primary sources of intelligence. However, some researchers have attacked the same sources of knowledge, and several of them can jeopardize the credibility of medical professionals (Lotfi, Morsi et al. 2016).

Companies primarily utilize prescription ads in formularies and academic publications as an important means of marketing new medications. A lecture on experimental medications at seminars and direct mail to doctors are the main sources to promote their objectives and achieve benefits. Medical representatives' offers free samples to the doctors to provide to patients are some of the other sales methods used. The usage of MRs is one of the traditional tactics, and it accounts for the majority of the prescription expenditure for drug marketing.

1.1 Statement of Problem and Research Gaps

Previous research has shown that pharmaceutical consumer advertisements have an effect on drug prescriptions. Spurring et al (2019) found the association between being exposed to knowledge given by pharmaceutical industry representatives with a higher prescribing level. Indeed, the WHO has expressed serious concerns about the risk that pharmaceutical companies can exert undue control over physicians' prescribing activity (Zahrani 2014) through encouraging intense pharmaceutical promotion activities (Adibe, Igboeli et al. 2015).

Pharmaceutical firms in Pakistan have been investing in a variety of advertising tools to increase their market share and earnings (Rahman, Rodríguez-Serrano et al. 2020). Consequently, many of these businesses allocate significant funds to various promotional resources to achieve greater exposure and expand their market base. However, as Shepherd points out, most pharmaceutical firms tend to use trial-and-error marketing tactics, which expose them to a range of risks. These risks include inadvertently increasing the visibility of competitors, missed opportunities, inconsistent understanding of the target consumer, and wasted time and money (Erlangga 2022).

As a result, further research is needed to thoroughly comprehend the qualitative and conditional effects of promotional tools on doctor prescribing conduct. Given that contextual variables such as product promotions, advertisement, direct marketing, and personal selling can influence physician prescribing behavior, this study may settle the controversy about the impact of individual patients on prescribing behavior.

Furthermore, previous studies are no longer relevant, are broadly oriented, and just suggested that advertising tools and patient demands are the most important variables in physician prescribing behavior. Salmasi, Ming et al. (2016) found that there is a lack of evidence to support the impact of promotional on doctor prescribing behavior. As a result, no detailed reviews of the interaction between individual patients and doctor prescription, including moderators, can be concluded. To

close this gape, the researcher conducted a systematic study (a review that uses predefined guidelines to find 41 findings on a specific topic) to re-examine the impact of advertising resources on doctors' prescribing decisions.

The pharmaceutical companies are a vast and valuable market across the world. They indulge in such activities that have a significant impact on the well-being of patients on a personal basis as a whole (Manchanda and Honka 2005). Various companies use a variety of methods to sell their products, including distributing presents, free lunches, bonuses, sponsoring schooling, and offering holidays as tax incentives to persuade a doctor to recommend without a clinical justification (Wazana 2000).

So, unethical marketing activities have been fixed in Pakistan's pharmaceutical sector, and their origins are so deep that reversing the trend could be impossible (Parmar and Jalees 2004). However, the previous analysis has a flaw: it was a case report specifically on the pharmaceutical sector in Hyderabad (Dawani and Sayeed 2019). In light of the results of this report, it was essential to repeat it on a Pakistani basis. As a result, this article was written with this objective. The prevalence of unethical drug practices is widespread across the world. Although it has been more severe in developed countries, there are two aspects of unethical drug practices (Siddiq, Khan et al. 2021). One is about drugs, while the other is about drug marketing. Internationally, extensive literature on drug-related illegal activities has been conducted. However, the reviewer was unable to locate any other longitudinal studies on unethical drug marketing activities only conducted by (Parmar and Jalees 2004). In their report, Parmar and Jalees (2004) found that the pharmaceutical sector invests a significant portion of its spending on consumer analysis but does not conduct research into deceptive drug marketing activities. One of the factors for this is that the industry engages in this activity and therefore sees without any need to research that matter.

The lack of study on the topic would not rule out the possibility of illegal substance marketing activities. According to the pre-survey and focus group discussions, illegal pharmaceutical advertisement activities have been the industry's accepted standard, and nearly all pharmaceutical firms have endorsed these unethical practices in partnership with physicians, government and private clinics, health-related organizations, and pharmacies at the expense of patients' health.

Literature Review

In 1947, Pakistan had not established any pharmaceutical production facilities and was mostly dependent on imports. The pharmaceutical industry consistently expanded, and by 1980, it began exporting finished pharmaceuticals, reaching an estimated $1.2 billion by 2007 (World Health Organization 2004, Goodman 2020). In 2013, Pharmaceutical’s growth rate was only 17% (Batool, Ali et al. 2020) but with time it increased and reached 2.6 billion US dollars in 2015 (Shaukat and Ming 2022).

Currently, Pakistan accounts for only 0.3% of the global pharmaceutical market, which is estimated to be worth over $1 trillion. The total turnover of the pharmaceutical industry in Pakistan is PKR 423 billion, with multinational and national enterprises holding market shares of 69% and 31%, respectively. The top 25 firms hold 60% of the market share, while the top 50 companies hold 80%, with an industry growth rate of 13.23% (Pakistan Credit Rating Agency (PACRA) Report 2022).

Physician's Prescribing Behavior

In the United States, pharmaceutical companies invested more than $57 billion in ads in 2004, nearly half as much as they spent on marketing growth (Gagnon and Lexchin 2008). Most of this money was spent on sales agents, sampling (free prescription distribution), physician visits, and advertising in the scientific literature (Manchanda and Honka 2005). The federal and provincial penalties for illegal substance marketing and price irregularities increased significantly (Gagnon and Lexchin 2008).

Pharmaceutical firms can have an unfair impact on doctors' prescribing behavior, according to these patterns. There is particular concern that a large number of doctors may be prescribing a limited number of highly marketed medicines or may be prescribing only branded medicines at the expense of quality care. However, there is a scarcity of observational data on physician prescription activity and its implications for patients. Some findings show that doctors recommend broadly, although most of this researches are old (Buusman, Kragstrup et al. 2005). Physician prescription habits are far more concentrated than the overall demand in each segment, according to new research; physicians vary in their favorite medication (Taub, Kolotilin et al. 2011).

Pharmaceutical enterprises must create a mix of marketing tactics within legal standards of practice (Hailu, Workneh et al. 2021). Firms need to understand how their advertising strategies influence physicians' choices of prescription medications. However, few studies have been conducted on the effect of pharmaceutical advertising techniques on physicians' prescribing behaviors (Carey, Lieber et al. 2021). Therefore, the purpose of this research was to evaluate how doctors' prescription behaviors at hospitals in Dessie, Ethiopia, are influenced by pharmaceutical advertising techniques (Duarte-García, Crowson et al. 2022).

Although theory assumes that habitual prescribing is both clinically and financially inefficient, the suitability of wide versus specific prescribing is likely to be determined by the medicine class's composition. Where one medication obviously outperforms the others or any of the medications in a class behave in the same manner, narrow prescribing might be the best option. Prescriptions for either a common or low-cost brand in a relatively homogenous class, it can be advantageous because reduced patient cost-sharing is linked to better adherence (Joyce, Escarce et al. 2002). Furthermore, since of their longer past record in medical practice and proven adverse effects, most generic drugs are intrinsically better than newer medications (Schiff and Galanter 2009). Alternatively, certain groups are distinguished by heterogeneous effects, in which a given treatment has adverse effects that are worrying for patients to deliver clinical advantage to some patients not to others. If the risks and adverse effects of these medications are understood, a better-informed practitioner can recommend more generally, taking into consideration each patients have unique medical requirements (Hailu, Workneh et al. 2021). Within the atypical antipsychotic grouping, psychiatrists recommend more widely than health professionals.

Aside from the difficulty of estimating a drug's medicinal potential for a new user, the prescription decision is further complicated through unrelated factor: schedule formularies. Most medication groups now include a plethora of related drugs that fight for the same consumer pool, and insurance providers usually choose a small segment of these products to sell at reduced cost-sharing prices. Furthermore, direct-to-consumer advertisement has given consumers the trust to order specific

therapies (Kravitz, Epstein et al. 2005). It's unclear if these conditions influenced doctors' decision on medication therapy.

Physician Habit Persistence

Providing the right medication to best-practice standards requires substantial learning, quest, and reasoning expenses from the perspective of a practitioner (Stern and Trajtenberg 1998). To administer the right prescription for a new patient, a physician must (1) collect medical knowledge regarding different medications and procedures, gather details about the patient, and adjust the medical expertise to the patient's actual needs. Most physicians complain that having enough knowledge from the literature is a big concern, since, they are frustrated with current science information, and are not successful at discovering new information (Laine and Weinberg 1999).

According to doctors, providing an appropriate prescription and following the most effective practices require a substantial investment of time, effort, and thought (Ahmed, Streimikiene et al. 2020). To recommend the appropriate medication to a new patient, a doctor must: (1) become well-versed in numerous medications and treatments, (2) compile data on the specific patient, and (3) align medical expertise with each patient's unique needs. Despite these responsibilities, they are often cited as some of the least challenging duties that physicians encounter (Murshid, Mohaidin et al. 2023).

Few studies have evidence for the impact of pattern persistence in doctor prescribing behavior, in comparison to the overwhelming literature on the preference of packaged goods. Coscelli (2000) found a first glance at physician preference durability, though it had significant limitations. For instance, it's impossible to say if their analysis accurately captures systemic persistence since these experiments don't account for treatment retention or transition in recurring patients, nor do they investigate the impact of marketing campaigns. Recent research has added to doctors' understanding of prescription inertia when accounting for the consequences of pharmaceutical advertising practices (Manchanda and Chintagunta 2004).

Promotion Tools

Depending on the marketplace and sector, promotional tools might differ, but generally, they consist of personal selling, advertising, sales promotion, direct marketing, and public relations (Akhmad 2021). Due to advancements in technology and the increasing influence of the digital era in our daily lives, these "promotion tools" have evolved significantly in the twenty-first century (Dar 2020). There are many reasons why an increasing number of businesses are transitioning to digital marketing strategies today (Anute, Thorat et al. 2022). Firstly, marketers pay close attention to their target audience and recognize that they spend the majority of their time conversing, reading emails, streaming online videos, and browsing social media or news, which encourages experts to utilize these platforms (Narayan, Mohanty et al. 2020). Secondly, compared to traditional advertising techniques, online advertisements are often much cheaper(Ali, Naser et al. 2022).

When it comes to recruiting and keeping clients, a sales marketing approach is critical. It may be used to increase consumer sales by providing them with the ability to try various things. Aside from that, a marketing approach is used to bring appeal to a product in order to increase consumer buying and selling performance (Awunyo-Vitor, Ayimey et al. 2013).

The aim of a sales incentive is to have a direct influence on a customer's buying behavior (Chaharsoughi and Hamdard 2011). The main goal of the study is to investigate the impact of promotional promotions on online fashion consumer behavior. Individuals reflect the online consumer behavior. Coupons and free shipping are only a few of the promotional tools that employ to entice customer to buy their products.

Drug have been shown to affect doctors' prescription decisions in studies conducted in the United States. Wang, Patel et al. (2009) found that drug samples affected the prescription decisions of 77% of the physicians in their research (Abraham, El–Serag et al. 2005). Bamoriya (2012) studied the impacts of pharmaceutical advertisement campaigns on prescription habits in India in a cross-sectional analysis. Corbin (1998) found that advertising samples affected doctor prescribing in a positive and significant way. The research, on the other hand, does not go into detail about how to calculate medication samples or assess their effect on prescribing. Another study examined physician perceptions against the pharmaceutical business (Miles and Huberman 1994). 91.2 percent of respondents receive prescription samples and believe that doing so is legal and beneficial to their patients. Doctors, on the other hand, continued to assume that medication samples had little effect on their prescribing decisions.

According to a cross-sectional study conducted in Turkey, 43.9 percent of specialists and general practitioners claim promotional gifts have a minor impact on their prescriptions, although 27 percent think no influence exists. Gifts, promotions, and sponsorship have a small yet significant impact on doctor prescribing behavior, according to a study conducted in India (Dai, Stafford et al. 2005). Another research examining the effect of mix marketing approach on medication prescribing found no connection between advertising resources (gifts and funded lectures) and prescribing activity of GPs and family doctors employed in Saudi Arabian primary care centers (Gooch, et al,. 2007). The findings, however, may not offer a convincing explanation for the fact that "promotion gifts" have little impact on medication prescribing. In addition, according to a recent Peruvian survey, 88 percent of those studies discussed that getting presents or attending luncheons hosted by pharmaceutical companies had little impact on their prescribing decisions (Miles and Huberman 1994).

Saito et al. (2018), conducted a single cross-sectional study of many Japanese specialists to assess physicians' participation in marketing events like meetings with MRs, presents, and pharmaceutical promotional events. Promotion practices have a modest impact on prescribing conduct. The effect of pharmaceutical marketing on prescribing decisions was studied in a cross-sectional analysis in Turkey. In Brazil, cross-sectional studies looked at the conditions that influence doctors’ prescriptions (Bombardier, Laine et al. 2000). Promotional methods, according to these scholars, have a significant and beneficial impact on physicians' prescribing decisions

Personal Selling

Personal selling is a type of marketing interaction in which salespeople communicate with potential customers face to face to promote their products. During the conversation, the salesperson tries to figure out what the consumer's concerns, wants, and desires are, and then provides a solution along with the option to buy a product. Several marketing studies support the retail excellence of appropriate personal selling as a key to retail success (Söderlund 2018). If a product is relatively affordable, hedonic, and selected by a customer's personal preference—for instance, electronic appliances, cosmetics, appliances, and fashionable apparel—interaction between a

consumer and a salesperson on the shop floor, such as the marketing strategy, plays a major role in the item's sale.

In-person interactions are used in personal selling to market goods and services. Sales representatives handle this kind of relationship as they serve as a buyer's point of contact for a business or its products and services (GOVINDARAJ, KUMAR et al. 2022). In addition to educating prospective clients about a company's products and services, salespeople use persuasion to constantly remind clients of features, terms of service, costs, special offers, and more (Siddiqui and Siddiqui 2024). This type of promotional communication technique can be a potent source of customer feedback and can improve client relationships. Successful personal selling considers the wants and needs of the customer without putting them under duress (Obeten, James et al. 2023).

One of the challenges of face-to-face selling is meeting customers' actual needs. Expert salespeople can read a buyer's unspoken liking in real-world situations. Customers may prefer to hide their true intentions or preferences through non-verbal cues, such as slight staring movements and altering facial expressions (Lieven 2016).

Improving the degree of personal service is yet another problem in shop floor management. High level of service quality enhances customer satisfaction, but it should be distinguished from unnecessary and saturated dimensions that lessen customer satisfaction, such as disruptive sales discussions, pushing tie-in sales, and undesired invitations to participate loyalty programs. Customers use self-service processes to avoid dealing with salespeople. Kurata and Nam (2010) investigated the optimal level of service quality above which customer satisfaction begins to decline.

Direct Marketing

Direct marketing (DM) is a means of attracting and retaining customers by offering based on three programs: review of specific consumer knowledge, plan development, and execution so that customers reacts directly (Arnold and Tapp 2001). Database and DM is a knowledge to follow relational marketing method that takes place in a sense of respect for the protection of consumer data (Roberts and Berger 1999), distinguishing it from junk mail. The trick to current DM is the collection of individual consumer information at the first transaction, such that the marketer may begin a partnership with that customer, and then handle them appropriately over time in order to attract customer loyalty (Arnold and Tapp 2001). Since they both revolve around the same basic ideas, this highlights the natural connection between DM and definitions like CRM.

In primary care, the promotion of new medications encompasses a wide range of actions, such as direct marketing, physician visits to clinics, and educational events conducted by corporations (Hailu, Workneh et al. 2021). Globally, medicine promotion is carefully regulated, and undue inducements and financial relationships between the pharmaceutical industry and healthcare providers are forbidden (Dankers, Verlegh et al. 2023). As a result, pharmaceutical marketing is often conducted in more discreet ways, such as through direct marketing mailings. Direct marketing mail refers to marketing materials that are physically delivered to a prospect's mailbox. This category includes all paper-based marketing materials, such as newsletters, flyers, and brochures (Elrod and Fortenberry 2020).

DM and database marketing are two concepts that are often used interchangeably. Arnold and Tapp (2001) found that database marketing is concerned with strategy formulation, while direct

marketing is concerned with direct contact with consumers. Database marketing, as the name implies, necessitates the organization maintaining or having links to a marketing database. Arnold and Tapp (2001) described a marketing database as a list of users and prospects' records that facilitates strategic analysis, as well as person selections for contact and customer care support. The information is arranged around the consumer. Roberts and Berger (1999) found that the database's material was gathered over a long period of time.

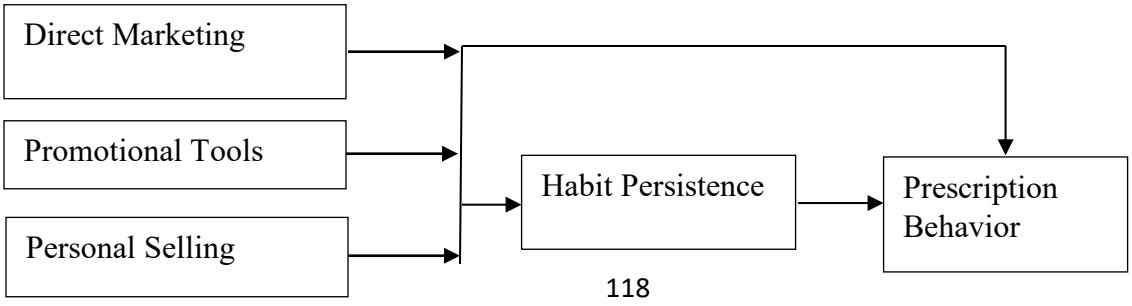
Practices of DM such as marketing research, preparation, policy execution, and monitoring are all based on a database that contains information on actual consumers. As opposed to general marketing, the benefit with this database-centric strategy is that it requires a natural emphasis on consumers rather than goods, reinforcing the obvious linkage of relationship marketing philosophy (Arnold and Tapp 2001).

Hypothesis

H1*: Direct marketing positively influences a physician's habit persistence.*
H2*: Direct marketing positively influences a physician's prescription behavior.*
H3*: Personal selling positively influences a physician's habit persistence.*
H4*: Personal selling positively influences a physician's prescription behavior.*
H5*: A physician's habit persistence positively influences their prescription behavior.*
H6*: Promotional tools positively influence a physician's habit persistence.*
H7*: Promotional tools positively influence a physician's prescription behavior.*
H8*: Physician's habit persistence mediates the relationship between direct marketing and prescription behavior.*
H9*: Physician's habit persistence mediates the relationship between personal selling and prescription behavior.*
H10*: Physician's habit persistence mediates the relationship between promotional tools and prescription behavior.*

Conceptual Framework & Theoretical underpinnings

The most suitable theoretical frameworks for understanding the relationship between direct marketing, personal selling, promotional tools, physician's prescription behavior, and the mediating effect of physician's habit persistence is the Theory of Interpersonal Behavior (TIB), which is an extension of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB). Theory of Interpersonal Behavior provides a comprehensive framework for understanding how direct marketing, personal selling, promotional tools, and physician habit persistence interacts to influence prescription behavior. By considering both individual and interpersonal factors, along with the mediating effect of habit persistence, this theory offers valuable insights for developing effective pharmaceutical marketing strategies and interventions aimed at influencing physician prescribing behavior.



Research Methodology

This study focuses on statistical and numerical techniques for data analysis, adopting a quantitative approach. The objective is to examine the relationship between Direct Marketing, Personal Selling, Promotional Tools, and Physician's Prescription Behavior, with Physician's Habit Persistence acting as a mediator. We used an explanatory purpose to explore these relationships and employed a Correlational Research Design. The population for this study includes permanent doctors in Punjab, Pakistan. The sample size was determined using the thumb rule suggested by Sekaran and Bougie (2016) proposed that a sample size between 30 and 550 is appropriate. Thus, the sample size for this study is set at 550. We used a five-point Likert scale, where 5 indicate "strongly agree" and 1 indicates "strongly disagree. "We chose convenience sampling because we aimed to collect data from doctors in Punjab, Pakistan, and did not have a complete list of the research population. Non-probability sampling technique particularly convenience sampling was selected for its practicality in this context.

Measurements

Table 3.1 presents the details of the items for the constructs used in this study, which were adapted from well-known studies.

Table 3.1

Variable	Source
Physician's Prescription Behavior	(YIMER 2021)
Promotional Tools	(Dr. R. R. Chavan 2018)
Personal Selling	(YIMER 2021)
Direct Marketing	(YIMER 2021)
Physician's Habit Persistence	(Murshid, Mohaidin et al. 2023)

Data Analysis

We analyzed the data for completeness and accuracy using SPSS (Statistical Package for the Social Sciences) version 26 and SmartPLS version 3.3.7. SPSS was employed to conduct demographic tests and perform descriptive analysis. In addition, we employed PLS-SEM to investigate the proposed connections between variables. SmartPLS was chosen for several reasons, including its ability to analyze multiple relationships simultaneously.

Response Rate and Data Screening

We received 463 accurate data out of 550 distributed questionnaire, response rate was 84.18%. To identify the pertinent data for multivariable statistical analysis, a data filtering procedure was implemented in the responses to the survey. The significance of data screening in analyzing data, especially in empirical studies, lays the foundation for meaningful outcomes. Hair, Ringle et al. (2013) adds weight to the claim that the caliber of first screening of data ought to determine the caliber of analysis. It goes without saying that to manage the data that was incomplete, it was necessary to identify the inadequate and incorrect questionnaire responses. 73 of the 463 questionnaires that were submitted were invalid because their replies were not considered complete. There are 390 questionnaires remain after the screening procedure.

Results

Analysis of Outliers

According to Hair, Sarstedt et al. (2016), "outliers are defined as responses to a particular questionnaire item that are extremely out of the ordinary, either for all or some of the questions, and significantly different from the rest of the data set." To identify outliers, we used SPSS version 23 to calculate the Mahalanobis distance value. To each case's data set, SPSS affixed a new column called MAH_1, which we contrasted to the Chi-square score. A Chi-square score of 97.039 (p=0.001) was considered acceptable for all 58 items in this research. Our results showed that the Mahalanobis distance values were higher than 97.039, indicating that there are no multivariate outliers in the collected data.

Assessment of Measurement Model

The construct's quality is assessed by evaluating the measurement methodology. The outside loadings are analyzed first when analyzing the quality requirements, and then the validity and construct reliability are examined. “The extent to which each of the items in the correlation matrix correlates with given principal component” is the definition of a factor, also known as factor loadings (Pett, Lackey et al. 2003). None of the items in this investigation was found to be less than the 0.50 recommended by (Hult, Hair Jr et al. 2018). Consequently, no items were removed from this investigation

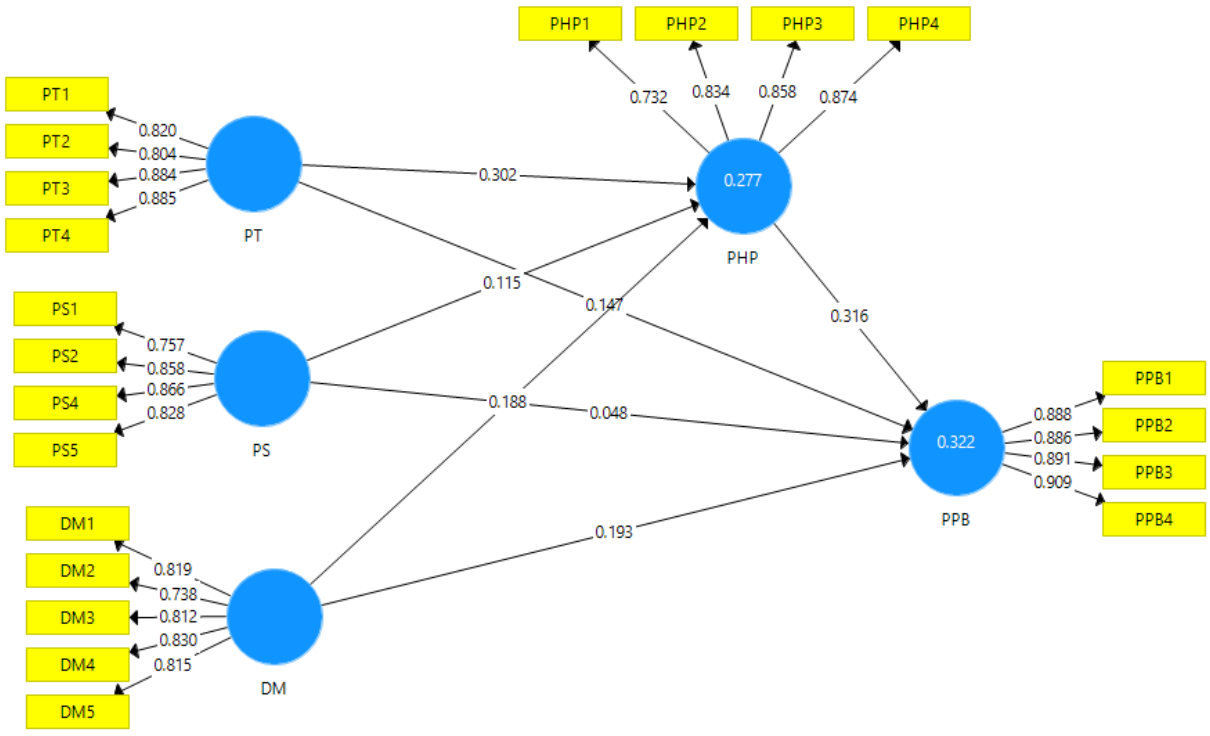


Figure 4.1

The Measurement Model

Reliability

"The degree of stability and consistency of a measuring instrument is its reliability" states (Marks and Karkouti 1996). Reliability is the key component of dependability. Will the findings of a tool that is used repeatedly be the same results (p. 285). While "Cronbach's Alpha" ranged from 0.844 to 0.916, "Composite Reliability" results ranged from 0.895 to 0.941. "Cronbach's Alpha" and "Composite Reliability" both show reliability scores that is greater than 0.7 as advised by (Hair, Ringle et al. 2011).

Table 4.1

Internal Consistency Reliability

Constructs	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
DM	0.864	0.901	0.646
PS	0.846	0.897	0.686
PHP	0.844	0.895	0.683
PPB	0.916	0.941	0.798
PT	0.871	0.911	0.721

Validity

Converging items are used to assess the underlying construct when the Average Variance Extracted value is equal to or greater than 0.50 (Fornell and Larcker 1981). "Convergent validity" results are reliant on AVE statistics. Every variable exceeds the suggested values. "Convergent validity" is therefore proven. Discriminant validity is developed when a construct's AVE R square is higher than its relationship with other items, as per the criteria established by Fornell and Larcker (1981). The construct's AVE R2 in the present study was found to be higher than its correlation with another construct. Thus, offering substantial backing for construct validity.

Table 4.2

Discriminant Validity

Constructs	**DM**	**PS**	**PHP**	**PPB**	**PT**
DM	***0.804***				
PS	0.552	***0.828***			
PHP	0.412	0.449	***0.826***		
PPB	0.428	0.408	0.489	***0.894***	
PT	0.529	0.760	0.489	0.441	***0.849***

Assessment of Significance of the Structural Model

The following stage of SEM is to examine the proposed hypotheses by examining the supposed relationship.

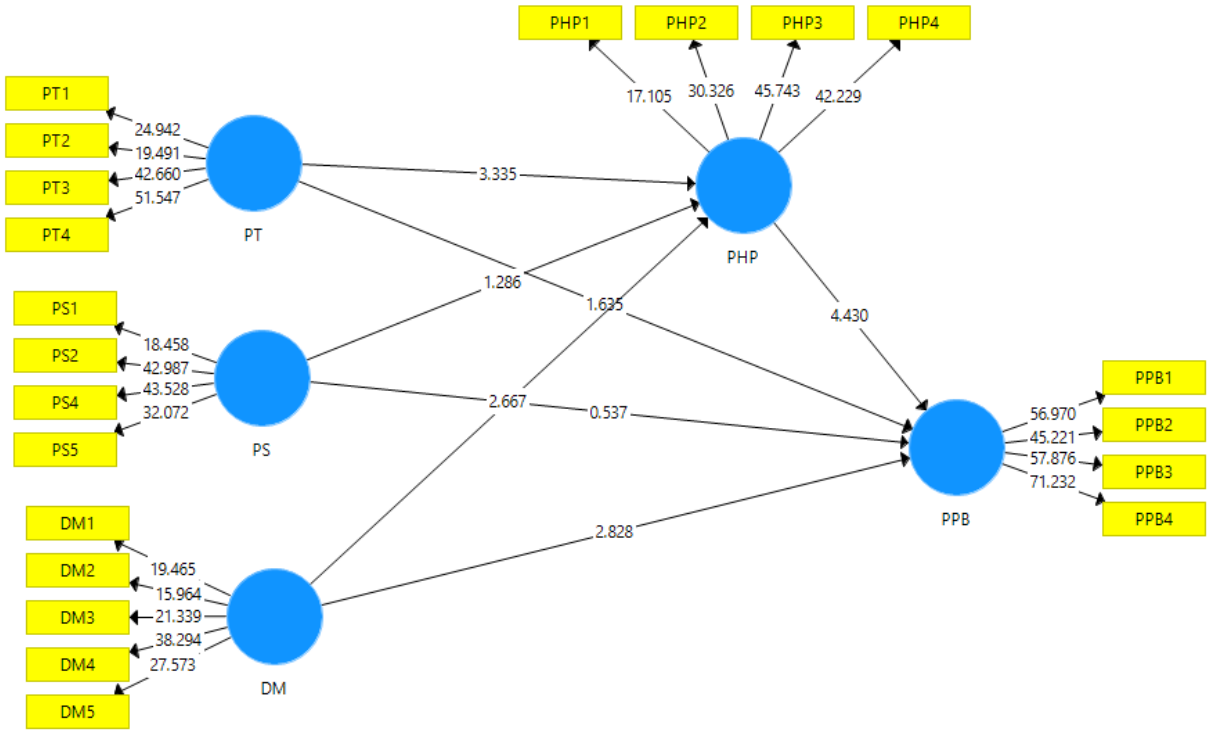


Figure 4.2

The Structural Model with Mediator

Direct Relationship

To begin, the main objective of the research was to evaluate direct connections in order to test the hypothesis associations between the components using the structural equation model. Therefore, among the four hypotheses that were evaluated in the present investigation and had direct correlations with physicians' prescription behavior, three of them were shown to be supported, whereas one was not. Two of the three hypotheses that were evaluated and found to be directly related to the persistence of physicians' habits (02) were found to be supported. Each latent variable's direct impact on the DV is explained in Figure 4.2.

First, hypothesis 1 postulated a beneficial relationship between “physicians' habit persistence” and “direct marketing”. The first hypothesis is supported by Table 4.6, which shows a substantial and positive connection (β=0.188, t=2.639, p=0.008) between “direct marketing” and “physicians' habit persistence”. According to Hypothesis 2, “physicians' prescription behavior” is favorably correlated with “direct marketing” with values of (β=0.193, t=2.791, p=0.005). Hence H2 is Supported. The results show that PS has a positive but insignificant association with PHP (β=0.115, t=1.262, p=0.207). Hence, H3 has been rejected. Hypothesis 4 has been rejected because the p-value is above the suggested value. As mentioned in Table 4.6, PS has insignificant association with PPB (β=0.048, t=0.536, p=0.592). Comparably, Hypothesis 5 postulated that a PPB and PHP are positively correlated. The findings shown in Table 4.6 indicate a noteworthy affirmative correlation between the PPB and PHP (β=0.316, t=4.328, p=0.000), validating hypothesis 5. Similarly, PHP has positive link with PT use with statistical values (β=0.302,

t=3.270, p=0.001), according to result hypothesis 6 has been supported. According to Hypothesis 7, PT is strongly correlated with PPB. Table 4.6 indicates that there is a positive and insignificant correlation between PPB and PT (β = 0.147, t = 1.693, p = 0.091), which refutes hypothesis 7.

Table 4.3

Direct Relationship

Associations	Beta β	(SD)	T Statistics	*P-V*	Decision
DM -> PHP	0.188	0.071	2.639	0.008	Accepted
DM -> PPB	0.193	0.069	2.791	0.005	Accepted
PS -> PHP	0.115	0.091	1.262	0.207	Rejected
PS -> PPB	0.048	0.090	0.536	0.592	Rejected
PHP -> PPB	0.316	0.073	4.328	0.000	Accepted
PT -> PHP	0.302	0.092	3.270	0.001	Accepted
PT -> PPB	0.147	0.087	1.693	0.091	Rejected

Mediation Analysis

Consequently, three mediating effects are identified in the present investigation using mediating variable hypotheses; Table 4.4 presents a considerable display of these hypotheses Furthermore, the structural model assessment is depicted in the following Table 4.4 together with the p-value, and mediation association of the model.

Table 4.4

Indirect Relationship

Hypothesis	Relationship	Beta Coefficient	S.D	T Values	P Values	Decision
H8	DM -> PHP -> PPB	0.060	0.028	2.146	0.032	Accepted
H9	PS-> PHP -> PPB	0.036	0.029	1.239	0.215	Rejected
H10	PT -> PHP -> PPB	0.095	0.038	2.497	0.013	Accepted

To determine if the proposed associations are statistically valid, Table 4.4 shows the coefficients of three mediating hypotheses along with their corresponding t-values and p-values.

- The 8th hypothesis of the present study has been accepted due to the mediating impact of PHP between DM and PPB (β = 0.06, t = 2.146 > 1.96, p = 0.032).
- The 9th hypothesis has been rejected due to the insignificant mediating impact of PHP between PS and PPB (β = 0.036, t = 1.239 < 1.96, p = 0.215).
- Finally, hypothesis 10 is supported by the significant mediating impact of PHP between PT and PPB (β = 0.095, t = 2.497 > 1.96, p = 0.013).

Adjusted R^2

The value of the PHP and PPB R-square in Table 4.5 is 0.277 and 0.322 respectively, whereas the value of the adjusted R2 for PHP is 0.268 and PPB is 0.311.

Table 4.5

Variance Explained

Constructs	***R^2***	***Adjusted R^2***
PHP	0.277	0.268

PPB	0.322	0.311

4.10 Predictive Relevance

This investigation used blindfolding to assess the model's predictive value (Q^2). The Blindfolding process examined the framework's capacity for prediction as (Geisser 1974) proposed. Likewise, in PLS modelling, the "Stone-Geisser test" is used to determine of Q2 (Duarte and Raposo 2010). According to Hair, Sarstedt et al. (2016), the Q^2 value is obtained via blindfolding to assess component estimations as well as how outcomes are created in the framework. Furthermore, the findings were achieved by blindfolding the values of the variable, and the "cross-validated redundancy was extracted" (Table 4.6).

Table 4.6

Assessment of Predictive Relevance

Constructs	***SSO***	***SSE***	***Q² (=1-SSE/SSO)***
DM	1,290.00	1,290.00	
PS	1,032.00	1,032.00	
PHP	1,032.00	858.4	0.168
PPB	1,032.00	787.753	0.237
PT	1,032.00	1,032.00	

In Table 4.6, Q2 has a value of 0.237 for PPB and 0.168 for PHP. Hair Junior et al. (2016) claimed that if the Q2 value is larger than 0. the framework has predictive importance.

Discussion

The objective of this research was to investigate the impact of promotional tools, personal selling, and direct marketing on physician prescription behavior via the mediating influence of physician habit persistence. H1 expected a favorable relationship between DM and PHP. The study found a substantial positive correlation between DM and PHP (β=0.188, t=2.639, p=0.008), confirming H1. H2 anticipated that DM had a favorable impact on PPB. The study found a substantial positive correlation between DM and PPB (β=0.193, t=2.791, p=0.005), Hence, H2 is supported as well. 3rd hypothesis has been rejected due to insignificance impact of PS on PHP with statistical value of (β=0.115, t=1.262, p=0.207). Whereas, 4th one Hypothesis is that PS has a significance and positive impact on PPB. According to results (β=0.048, t=0.536, p=0.592), H4 is rejected. Furthermore5th hypothesis of current study is that PHP is positively correlated to PPB. The outcomes demonstrate a positive impact of PHP on PPB (β=0.316, t=4.328, p=0.000), Hence, this hypothesis is accepted according to results. Similarly, PT has significant and positive effect on PHP. Outcomes demonstrate the same direction of proposed hypothesis (β=0.302, t=3.270, p=0.001), So, H6 accepted as well. H7 hypothesized that PT had a favorable relationship with PPB. The study found an insignificant and favorable association between PT and PPB (β=0.147, t=1.693, p=0.091), 7th hypothesis is rejected.

The research investigation illustrates the coefficient of three mediating hypotheses and their associated p-value and t-value to determine if the hypothesized associations are considered significant or not. H8 suggests that PHP has a significant impact in mediating the relationship between DM and PPB (β =0.06, t =2.146 >1.96, p=0.032<0.05). Thus, H8 is accepted. H9 is rejected because the mediating effect of PHP is insignificant between PS and PPB (β =0.036, t =1.239<1.96, p=0.215>0.05). Similarly, final hypothesis is supported by the prediction that there

is a substantial mediation impact of PHP between PT and PPB (β =0.095, t =2.497>1.96, p=0.013<0.05).

Conclusion

Theoretical and Managerial Implications

The Pakistani pharmacy industry is worth 800 million US dollars, as per the International Medical Survey, it is rising at a pace of 25.72 percent. This data proves that the pharmaceutical industry in Pakistan is a lucrative investment opportunity. As a result, stakeholders must recognize trends in pharmaceutical practice in order to develop their business in Pakistan.

This research would provide excellent benefits to established medical businesses that have been working in the country for a long time. They would have several chances to determine the appropriate advertising inputs rather than wasting money on ineffective tactics. Around the same time, these businesses will determine the core factors that can enhance doctors' attention. Pharmaceutical firms, for instance, spend a lot of money on international seminars for physicians by gaining high profit. Since no mass media is permitted for pharmaceutical promotion in Pakistan, it is critical to recognize constructive and ethical marketing practices. These considerations are especially useful when introducing new goods to the market.

Another group that gained from this research is newly companies interested in Pakistani pharmaceutical companies. It will give them new insights in determining the psychological attitudes of Pakistani doctors against the current corporations' promotional strategies. At the very same time, it allows them to fine-tune their plans before launching the product in the world. For instance, a pharmaceutical firm from the United States wants to penetrate the Pakistani market. According to the American scheme, this pharmaceutical business is more focused on DTCA promotion.

Another group that would learn from this study in terms of policymaking for the pharmaceutical sector is the government. The Government of Pakistan is now preparing to enforce the country's national drug strategy. In this situation, they would be able to get any suggestions for loosening the restrictions on pharmaceutical firms. This will therefore assist physicians with determining whether his conflict of interest exists. The findings of the researcher would assist in resolving the opposition and adhering to the traditional and acceptable standard followed by all medical professionals. Furthermore, this study will serve as a foundation for several other studies on the pharmacy companies. The importance of this analysis as a whole would include constructive feedback to the stakeholder groups in the Pakistani healthcare sector.

Recommendations for Future Research

This study is cross-sectional research that makes a substantial addition to current studies on MRs and other marketing tools in industrialized and emerging countries. It is empirical and focused on quantitative examination. As a result, prospective scholars will be able to do longitudinal studies. Physician attitude may also be seen as a mediator between advertising resources, personal sale, direct marketing, and physician prescribing actions in the future. This needs to compensate for the fact that the new research on the impact of these marketing strategies on prescribing behavior is minimal, unconvincing, and contentious. Questionnaire results, focus group interactions, and experiments that explicitly test the relations, on the other hand, are scarce. As a result, prospective experiments on the effects of the environment should take into account these limitations.

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