# The Effect of Unethical practices in Pharmaceutical Personal Selling on Physicians Prescription Decision: A Comparative Analysis based on Medical Representatives' and Physicians' Perspectives

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## Abstract

*Malpractices in the pharmaceutical industry, particularly in Pakistan, are lamentably prevalent, as they involve the deployment of unethical marketing techniques aimed at persuading physicians to prescribe their medicines. The primary objective of this research is to uncover the ethically questionable aspects of personal selling practices in the Pakistani pharmaceutical sector. Data was gathered through the utilization of adopted questionnaires from a total of 391 MRs and physicians who are employed in the bustling city of Karachi. The hypotheses were tested using PLS Path Modelling (CFA) and Multi Group Analysis (MGA). The findings suggest that the choice to prescribe the medication could be influenced by certain unethical practices observed in the personal selling process. The MGA findings also highlight the impact of disparaging remarks about competitors on physicians' decision-making within their group. Additionally, providing incentives has been found to significantly influence the decisions of physicians in the MRs group. Furthermore, physicians have a greater understanding of the impact of making disparaging remarks about competitors compared to MRs. Similarly, MRs are more conscious of the effects of providing incentives than physicians. In addition, this study found that there is a notable distinction in the impact of certain unethical practices on the prescribing decisions of medical representatives and physicians. The findings may not be universally applicable, for the intricacies of the topic matter are manifold. Identifying dimensions of unethical practices and their drivers can potentially aid PI stakeholders in mitigating their impact, enhancing professional awareness, and elevating public image. This study, a rarity indeed, examines the perspectives of multiple players on malpractices sub-dimensions.*

*Keywords: Personal selling malpractices, pharmaceutical industry, Medical representatives, Physicians, Partial least square path model, Confirmatory factor analysis.*

## Introduction

### Background of the study

Pharmaceutical businesses offer a vast assortment of medications, from basic painkillers to complex treatments for enduring ailments. The pharmaceutical sector is crucial for public health, with developed countries leading the way. Advancements in chemistry, biology, and medicine have accelerated drug development, predicting steady market growth in the coming decade. Pakistan's pharmaceutical sector is implementing import substitution, resulting in a whopping USD two billion in annual savings. This sector contributes 4.2% to the country's manufacturing output and employs 90,000 workers. Despite a high healthcare budget of Rs 920 billion in 2022, the sector only accounts for 1.4% of the GDP.

Pakistan's pharmaceutical market, primarily driven by domestically produced generic drugs, has experienced a significant portion of the country's requirements, with domestic sales growing at a 15.3% CAGR. The market, valued at Rs. 748 billion, is projected to reach Rs. one trillion by 2025, due to local production growth and increased healthcare spending. However, the top 10 companies control 47% of the market, while the top 25 and top 50 companies hold 72% and 90% respectively. The top 10 brands contribute to 22% of total industry sales. Despite these advancements, Pakistan still has a limited presence in international trade, with pharmaceuticals ranking 17th in the global export market in 2022 and a CAGR of 12%.

In the medical field, physicians are held to a high standard of ethics that places patient well-being and the Hippocratic Oath at the forefront. However, medical representatives sometimes encounter conflicting interests in their business-oriented positions. The contrast between the two groups has ignited ongoing debates about the ethical implications of their behavior. Pharmaceutical businesses use a variety of sales methods, some of which may be unethical, to enhance sales (Civaner, 2012). Doctors may prescribe medication based on incentives and financial benefits (Chimonas et al. 2010). Doctors' prescribing habits can be changed by a little gift (Katz et al. 2010). Gift value can impact a doctor's prescribing decisions. The research conducted by Zipkin and Steinman (2005) sheds light on the impact of promotional endeavors on the decisions made by doctors regarding prescriptions and their inclination towards requesting pharmaceutical additions. It raises the possibility that doctors may lack awareness of this influence as it is documented in the medical literature.

Unethical practices also include misleading and incomplete information, derogatory remarks about competitors and their products, and limitations on incentives (Ching and Ishihara, 2012). These practices can influence physicians' prescribing choices (Siddiqui et al., 2011). The effort suggests that there is a need for further analysis of the impact and drivers of these unethical practices.

**Gap Analysis**

Pharmaceutical companies' strategies influence physicians' prescribing decisions in both developed and developing nations, with a greater impact in developed nations (Murshid and Mohaidin, 2017). Ethical issues include unethical marketing, IP protection, drug prices, misleading information, research data transparency, and reps ethics (Williams-Jones and Ozdemir, 2008). Pharmaceutical companies use unethical sales methods to boost sales, including gift, sponsorship, and sampling procedures (Handa et al. 2014). Contract medical research raises ethical concerns. Gifts and financial benefits can influence doctors' prescribing decisions (Adobor, 2012). Even small gifts can impact drug prescriptions (Katz et al., 2010).

Schramm et al. (2014) reported incidents of misleading marketing, off-label advertising, and incorrect pricing in the US. Alleged fraudulent marketing accounted for 48% of the incidents, off-label advertising for 52%, and incorrect pricing for 33%. Alkhateeb (2011) suggests implementing PSR training and certification to prevent the influence of pharmaceutical sales representatives on doctors' prescriptions. However, scientific promotional strategies were considered more important than sponsorship in changing prescription practices (Siddiqui et. al, 2011).

Research on unethical conduct in pharmaceutical marketing in Pakistan has found a lack of attention to key issues such as misleading information, disparaging competitors, and offering incentives to physicians. This study aims to address this gap by conducting a comprehensive analysis involving multiple stakeholders. The research suggests the need for further studies on factors contributing to these malpractices. By understanding the significance and consequences of these issues, policymakers can take measures to address them at the state level.

**Research Questions**

The effort highlights the issue of questionable practices in pharmaceutical sales management and presents different viewpoints according to key stakeholders on the matter. It suggests that some practices in the industry prioritize profit over patient well-being and are considered unethical. These practices include aggressive marketing tactics, disparaging competitors, incentives and the

dissemination of misleading information. To delve deeper into the issue, the input proposes the formulation of research questions.

- How can this lack of unanimity about unethical behaviour be explained?
- Could it be that the set of variables (misleading & incomplete information, disparaging competitors and providing incentives) considered unethical practices in the pharmaceutical industry?
- Could it possibly be attributed to the variations in the contexts of the studies in light of key stakeholder (MRs & Physicians) opinions differences?
- Is it possible that there may be particular dominance of these malpractices in influencing physicians prescribing decisions in view of both stakeholder opinions?

## Literature Review

Pharmaceutical firms are grappling with ethical decision-making, with some prioritizing profits while some pharmaceutical focus on stakeholders and society (Carrigan et al., 2005). Sharma and McClaren (2000) argue that there is a lack of research on ethical behavior among salespeople in emerging economies, specifically in the medical and pharmaceutical sector. Previous studies have primarily focused on employees' perspectives on ethical issues, with few exploring the involvement of other players such as pharmacies, healthcare providers, patients, and insurance companies in the sale of prescription medications (AlKhatib et al., 2002). In this paper we start by defining and outlining the key aspects of the salespeople's ethical conduct. How the study was conducted and what the results showed from the modified surveys administered to Pakistan MRs and physicians both groups opinions toward dimensions of malpractices and their impact on physicians decision influences that may or may not as significant as they may seem through Multi Group Analysis. Lastly, the results, study implications, and future research directions are discussed.

### Theoretical Model & Conceptual Framework

Pharmaceutical companies are promoting ethical conduct with stakeholders, analyzing ethical and unethical principles, theories, and models. Murphy and Laczniak's (2019), deontological norms emphasize the importance of following the correct process, while Singhapakdi and Vitell (1991), emphasized consequentialist approaches, emphasizing the need for established rules. Hunt and Vitell (1986), Fraedrich and Ferrell (1992), and Rallapalli's (1998) research highlight the importance of evaluating actions based on their ethical implications, with strong ethical

climates leading to more ethical marketing practices. Bandura and Walters' (1977), social learning theory emphasizes the importance of observation and learning from one's environment in shaping behavior and interpersonal relationships.

**Theory of planned behavior (TPB)**

Ajzen's (1991), TPB theory suggests a favorable relationship between custom and behavior, with increasing convention practices influencing prescribing practices. Perkins (2007), Godin et al (2008), and Rashidian's (2012) research show that regular interactions with pharmaceutical representatives influence prescribing decisions and attitudes. Godin (2008), Murshid, and Mohaidin's (2017), research highlights the favorable impression physicians have on medical representatives, influenced by their interactions and personal selling practices. The TPB also highlights the impact of external factors on physicians' attitudes towards medicines. Medical representatives face ethical issues that influence their ethical behaviour, affecting physicians' prescribing decisions and highlighting the importance of understanding and addressing these issues.

**Dimensions of Personal Selling Malpractices & Development of Hypotheses**

Experts argue that salesmen should treat doctors honestly, transparently, and fairly according to moral standards. Román and Munuera (2005) emphasize customer satisfaction and trust, while Runes (1964) define ethics as justice and honesty. Different people have varying definitions of unethical business practices. Some researchers suggest that short-term salespeople benefit at the expense of customers (Román, 2003). Despite ethical concerns, Dubinsky (1980) argues that salespeople can still make money. Unethical practices in sales include lying about product benefits.

**Provide misleading and incomplete information**

Lie and Scheurich (2014) discovered that doctors who interact with medical representatives and listen to drug presentations prescribe more medication. Frequent prescriptions can raise medical costs and cause inappropriate drug prescriptions (Caudillet et al., 1996). A survey found that many managers engage in dishonesty, unrealistic commitments, and unnecessary product sales during sales calls. This behavior can contribute to illness instead of promoting awareness. (Hollon MF, 2005). Promotional agents often touted therapeutic benefits without citations. Medical reps provided little adverse response pharmacological literature (Amanjot Kaur et al.,

2023). It's astonishing that just 37.03% of practitioners know WHO Drug Product Label (DPL) standards. Based on the literature, a hypothesis is formed.

*H1: Providing misleading and incomplete information by medical representative has significant positive impact on physician prescribing decision.*

**Making Disparaging Remarks about Competitors and Their Products**

Pharmaceutical company representatives criticizing competitors Skandrani and Sghaier (2016) found that MRs are more prone to trash-talk rivals' beliefs and products. According to Cooper and Frank (1991), is one of six unethical practices. Howe et al. (1994) and Cooper and Frank (2002) discovered that changing product information to achieve a competitive edge is a serious ethical issue in the insurance sector. Conversely, MRs often criticize competing companies. Skandarani and Saghaier (2016) claim that medical representatives are more likely to criticize competitors and make inappropriate product comments. Laczniak (1983) suggests that lower sales management levels may experience more performance-related stress that is one of the major reason for derogatory remarks about competitors. Some arguing this mindset encourages personnel to misrepresent competition products to boost own sales. Following the conversation, a hypothesis was formed.

*H2: Making disparaging remarks about competitors and their products by medical representative has significant positive impact on physician prescribing decision.*

**Giving Incentives**

Gifts to physicians by the pharmaceutical industry are well documented, but their effects are not (Verschoor, 2006). Some pharmaceutical promotional efforts used lavish trips, game tickets, and direct financial transfers to induce doctors to prescribe certain brands (Kotler, 2004; Verschoor, 2006; Lassman, 2017). Several studies show that incentives can affect doctors' prescribing decisions. Specialists are more likely than doctors to believe prescriptions may be influenced by giving incentives (Crigger, 2005; Daniella A. Zipkin, MD, Michael A. Steinman, MD 2005; Skandrani & Sghaier, 2016; Suriyaprakash and Chinnu Stephan, 2022). Around 50% of prescribers prescribe a well-known drug following company-sponsored events, according to several reports. The corporation may claim that funding, medical camps, and experimental studies help doctors better. Some argue that such rewards could create conflicts of interest and impair medical research and practice. Some researchers say MRs abhor competition (Masood I,

Ibrahim M, Hassali M, Ahmed M. 2009; Skandrani & Sghaier, 2016). Research suggests that specialists may not be more likely than doctors to believe prescriptions may be influenced (Crigger, 2005; Daniella A. Zipkin, MD, Michael A. Steinman, MD 2005; Skandrani & Sghaier, 2016; Suriyaprakash and Chinnu Stephan, 2022). Literature directs the development of the following hypothesis.

*H3: Giving incentives by medical representative has significant positive impact on physician prescribing decision.*

**Dimension of PSM & Multi Group Analysis**

Doctors in developing nations are often influenced by personal marketing when writing prescriptions as per their physicians' respondent, according to scholars (Mehralian et al., 2016; Abdul Waheed, 2011). Experienced physicians are more likely to engage in these malpractices as per Reps (Janakiraman et al., 2008), and specialty-trained doctors are influenced by medical representatives' personal selling (Mikhael and Alhilali, 2014). This study compares physicians' and medical representatives' perceptions of dimensions of personal selling malpractices and their effects on prescribing decisions. Our main theories on group differences are: (MRs and physicians Group differences).

MRs and physicians have differing views on the impact of personal marketing malpractices on prescriptions. Western scholars have studied personal selling malpractices and found varied perspectives. Specialists in poor countries believe that personal marketing malpractices have a greater impact on prescription decisions. Specialty-trained physicians are more influenced by individual marketing tactics, while older physicians are more open to thorough explanations. Data also shows that MRs and physicians disagree on the effectiveness of personal selling malpractices in pharmaceutical marketing. The following hypotheses emerged:

*H4: The effect of the providing misleading and incomplete information toward physicians prescribing decisions will be more significant for medical representatives than for physicians.*

*H5: The effect of the making disparaging remarks about competitors and their products toward physicians prescribing decisions will be more significant for medical representatives than for physicians.*

*H6: The effect of the giving incentives toward physicians prescribing decisions will be more significant for medical representatives than for physicians.*

The conceptual framework that supports this investigation is shown in Figure 1, which also displays the hypothesized relationships that have been proposed.

*Figure 1.*
*Conceptual model*
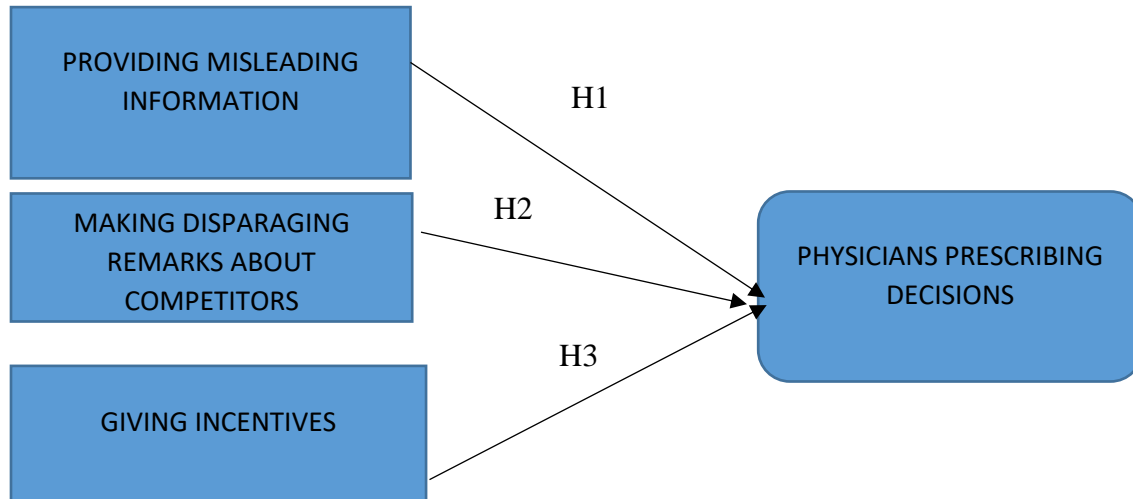


**Research Methodology**

**Research Design**

Markham (2012) emphasizes the significance of research design in achieving research goals. This study examines the effects of personal selling malpractices on physicians' decisions and healthcare practices in the Pakistan pharmaceutical industry. It employs a quantitative approach to generalize findings to the target population. The research design involves identifying the subject, establishing the research direction, and reviewing existing literature.

**Sampling and data collection**

The study used online surveys with 391 (Pakistani physicians and MRs) approved replies (82% response rate). The sample size was determined to be 100 or 10% of the target population with Hair et al. (2014) stating a minimum of 200. Stratified random sampling was used to ensure representation of different medical specializations according to their portfolio and geographic association. Prior research by Burn and Bush (2006) emphasizes the importance of assessing survey questionnaires for validity, reliability, and construct quality, when a VIF exceeds 3.3, it suggests that there may be common method bias present in the system (Kock, 2015). The VIF values in Table 3 are all below 3.3, suggesting that there is no common method bias in the

model. A pilot study was conducted to assess the survey questionnaire's validity and reliability, confirming its validity for further study. A preliminary data set of 30 responses from medical representatives and private hospital physicians in Pakistan on pharmaceutical marketing techniques was collected, confirming the survey's validity and reliability for a full-scale study.

Table 1
Measure Utilized

| Codes | Variables | Items | Source |
|---|---|---|---|
| PDI | Physicians Prescribing Decision | 4 | Zipkin & Steinman 2005 |
| MI | Provide Misleading & Incomplete Info. | 5 | Doney & Cannon, 1997; Ramsey &Sohi, 1997; |
| MDC | Making Disparaging Remarks about Comp | 4 | Lagace,Ingram, &Broom,1999; Zipkin &Steinman, 2005 |
| GI | Giving Incentives | 6 | |

**Demographic profile of the respondents**

At first, preliminary tests were carried out using the SPSS software 20 version. The demographic analysis has been conducted to collected data on the respondents' profile, gender, age, education, experience, position (MRs), category (MRs), and category (physicians). The results are presented in Table 2.

Table 2
Demographic Profile of Respondent

| Items | Classification | Sample Amount | Percentage |
|---|---|---|---|
| Profession | Medical Reps | 276 | 70.6 |
| | Physicians | 115 | 29.4 |
| Gender | Male | 229 | 58.6 |
| | Female | 162 | 41.4 |
| Age | Below 30 years | 101 | 25.8 |
| | 31 – 40 | 199 | 50.9 |
| | 41 – 50 | 65 | 16.6 |
| | Above 50 years | 26 | 6.7 |
| Education | Specialist | 21 | 5.4 |
| | General Physicians | 94 | 24.1 |
| | Graduate | 117 | 29.9 |
| | Masters | 140 | 35.8 |
| | Pharm D | 19 | 4.9 |
| Experience | Less than 5 years | 225 | 57.5 |
| | 5 - 10 years | 54 | 13.8 |
| | 11 - 15 years | 71 | 18.2 |
| | 16 - 20 years | 30 | 7.7 |

|  |  |  |  |
|---|---|---|---|
|  | More than 20 years | 11 | 2.9 |
| Position (MRS) | ASM | 46 | 16.7 |
|  | MRs | 137 | 49.6 |
|  | RSM | 77 | 27.9 |
|  | TM | 16 | 5.8 |
| Category (MRS) | Local | 187 | 67.8 |
|  | MNCs | 89 | 32.2 |
| Category (PHY) | Both | 21 | 18.3 |
|  | Private Hos/Cli | 82 | 71.3 |
|  | Public Hos/Cli | 12 | 10.4 |

## Data Analysis

### Describtive Analysis

Table 3
PLS factor loadings, Mean, Std. Dev., T-test, P- Values and VIF of each item MRs and physicians.

| CONSTRUCT | QUESTIONNAIRES | Code | Group MRs Profession | | | | | | Group Physicians Profession | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | Descriptive Stats | | | CFA | | | Descriptive Stats | | | CFA | | |
|  |  |  | Mean | Std. Dev | Factor Loading | T-test | P-Value | VIF | Mean | Std. Dev | Factor Loading | T-test | P-Value | VIF |
| Giving Incentives | Promotional gifts influence physician prescribing | GI1 | 3.844 | 1.072 | 0.786 | 23.386 | 0.000 | 2.2026 | 3.929 | 1.116 | 0.785 | 13.265 | 0.000 | 1.569 |
|  | Medical Representatives may cross ethical boundaries by giving gifts to physicians. | GI2 | 3.894 | 0.855 | 0.782 | 18.204 | 0.000 | 2.5955 | 4.018 | 0.896 | 0.800 | 12.048 | 0.000 | 1.569 |
|  | Sponsored meals are influential | GI3 | 3.749 | 0.811 | 0.771 | 29.962 | 0.000 | 2.1772 | 3.677 | 1.212 | 0.763 | 14.609 | 0.000 | 2.57 |
|  | Conference attendance would decline without meal. | GI4 | 3.597 | 1.408 | 0.780 | 21.367 | 0.000 | 2.0773 | 3.732 | 1.026 | 0.920 | 34.398 | 0.000 | 2.174 |
|  | Sponsored resort seminars bias physician prescribing behavior | GI5 | 3.2 | 1.149 | 0.798 | 42.2 | 0.000 | 2.1 | 3.4 | 0.979 | 0.781 | 14.389 | 0.000 | 2. |

| Category | Statement | Code | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 85 | | 76 | | 02 | 29 | | | | | | 85 |
| | Pharmaceutical representatives support important conferences and speakers to gain favour. | GI6 | 3.769 | 0.838 | 0.843 | 55.602 | 0.000 | 2.429 | 3.804 | 0.915 | 0.892 | 24.349 | 0.000 | 2.6 |
| | The Medical Representatives that visit physician are not totally honest when informing physician | MI1 | 3.883 | 0.993 | 0.841 | 16.769 | 0.000 | 2.875 | 3.696 | 1.068 | 0.783 | 6.618 | 0.000 | 2.354 |
| Misleading & incomplete information | The Medical Representatives that visit physician often misrepresent scientific data about drugs. | MI2 | 3.531 | 0.953 | 0.750 | 17.307 | 0.000 | 2.166 | 3.321 | 1.212 | 0.809 | 11.126 | 0.000 | 1.322 |
| | The Medical Representatives that visit physician usually don't give accurate data about the side effects of the drugs. | MI3 | 3.151 | 1.170 | 0.862 | 44.597 | 0.000 | 2.392 | 3.500 | 1.035 | 0.863 | 21.244 | 0.000 | 2.668 |
| | The Medical Representatives that visit physician provide wrong information by promoting products in an off-label indication during sales call. | MI4 | 3.546 | 0.939 | 0.729 | 16.453 | 0.000 | 2.160 | 3.339 | 0.912 | 0.772 | 13.767 | 0.000 | 2.757 |
| | The Medical Representatives that visit physician usually exaggerate when presenting the benefits of a new drug. | MI5 | 3.536 | 0.800 | 0.849 | 43.354 | 0.000 | 2.166 | 3.446 | 1.101 | 0.797 | 15.378 | 0.000 | 2.375 |
| | The Medical Representatives often misrepresent competitors' products to gain competitive advantage. | MDC1 | 3.626 | 1.312 | 0.918 | 72.918 | 0.000 | 2.237 | 3.250 | 1.106 | 0.869 | 26.702 | 0.000 | 1.949 |
| Making Disparaging Remarks | The Medical Representatives often incline negative things about competitors and their products. | MDC2 | 3.475 | 0.757 | 0.837 | 34.736 | 0.000 | 2.861 | 3.429 | 1.067 | 0.869 | 23.149 | 0.000 | 2.386 |

| | Statement | Code | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| about Competitors | The Medical Representatives that visit physician usually exaggerate the cost of competitors product | MDC3 | 3.419 | 1.108 | 0.872 | 29.152 | 0.000 | 2.985 | 3.339 | 1.206 | 0.745 | 8.233 | 0.000 | 2.003 |
| | The Medical Representatives that visit physician often under estimates efficacy of competitor's drugs. | MDC4 | 3.575 | 1.093 | 0.882 | 62.846 | 0.000 | 2.667 | 3.821 | 1.297 | 0.838 | 23.901 | 0.000 | 1.136 |
| Physicians Prescribing Decisions Influences | Pharmaceutical representatives influence physician prescribing. | PDI1 | 3.855 | 1.031 | 0.925 | 87.165 | 0.000 | 2.638 | 3.964 | 0.844 | 0.900 | 28.288 | 0.000 | 2.977 |
| | Physicians changed practice based on discussion with a pharmaceutical representative | PDI2 | 3.950 | 1.183 | 0.919 | 64.789 | 0.000 | 2.731 | 3.776 | 1.118 | 0.898 | 30.393 | 0.000 | 2.879 |
| | Information from representative presented at conference influences physician prescribing | PDI3 | 3.497 | 1.150 | 0.941 | 110.049 | 0.000 | 2.566 | 3.571 | 0.821 | 0.849 | 22.972 | 0.000 | 2.313 |
| | Formulary requests made at suggestion of a pharmaceutical representative. | PDI4 | 3.838 | 1.074 | 0.909 | 71.312 | 0.000 | 2.638 | 3.804 | 1.007 | 0.884 | 29.003 | 0.000 | 2.583 |

The descriptive results provide valuable insights into the literature on MRs' unethical behavior as indicated in table 3. Certainly, in addition to the ethical concerns commonly discussed in marketing literature, there are various issues to consider. Based on our findings, it appears that there may be some discrepancies in the information provided by the MRs during their visits with physicians. The mean value and standard deviation for Mrs are 3.883 and 0.993, respectively. On the other hand, the mean and standard deviation for Physicians are as follows: 3.696, 1.068, based on the scoring scale, both respondents are in agreement regarding the occurrence of these malpractices. Scientific data about drugs is sometimes misrepresented by MRs. The mean and standard deviation of MRs' scores are 3.531 and 0.953, respectively, indicating a moderate level of agreement. On the other hand, physicians' scores of 3.321 and 1.212 suggest a lower moderate level of agreement compared to MRs. The MRs usually don't give accurate data about the side effects of the drugs. MRs score mean and standard deviation 3.151, 1.170, while physicians

score 3.500, 1.035, clearly indicate moderate level of agreement with physicians slightly higher than MRs. During sales calls, the MRs sometimes provide inaccurate information by promoting products for uses that are not approved by regulatory authorities (off-label indication). The mean and standard deviation scores for both MRs and physicians are as follows (MRs: 3.546, 0.939; Physicians: 3.339, 0.912).

Similarly, making disparaging remarks about competitors and their products factors includes, misrepresent competitors (MRs 3.686, 1.312; physicians 3.250, 1.106), as per score MRs are high level of agreement than physicians (moderate). MRs often incline negative things about competitors and their products (MRs 3.475, 0.757; physicians 3.429, 1.067), exaggerate the cost of competitors product (MRs 3.419, 1.108; physicians 3.339, 1.206), as per results both moderate levels of agreement and finally under estimates efficacy of the competitor's drugs (MRs 3.575, 1.093; physicians 3.821, 1.297), results indicate that the physicians higher level of agreement than MRs perceive as moderate level of agreement. In addition, the practice of offering incentives to physicians raises ethical concerns. It involves giving gifts that can influence prescribing decisions (MRs 3.844, 1.072; Physicians 3.929, 1.116). MRs have been found to cross ethical boundaries when giving gifts (MRs 3.894, 0.855; physicians 4.018, 0.896) and providing meals (MRs 3.749, 0.811; Physician 4.018, 0.896). The results of these questions show a high degree of agreement among both MRs and physicians. Conference attendance would decrease without meals (MRs 3.597, 1.408; Physicians 3.732, 1.026), the scores show that physicians have a higher degree of agreement compared to MRs, who have a moderate degree of agreement. Organizing resort seminars that may influence prescribing behavior (MRs 3.285, 1.149; physicians 3.429, 0.979), both MRs and physicians show moderate consent. Finally, MRs support important conferences and speakers to gain favor (MRs3.769, 0.838; physicians 3.804, 0.915), there is a high degree of agreement that these practices are major malpractices in pharmaceutical marketing in Pakistan.

Various factors can influence physicians as per descriptive results, when it comes to prescribing items. One of these factors is the influence of medical representatives (MRs). It has been observed that MRs have a significant high impact on physician prescribing, as indicated by the mean and standard deviation scores (MRs 3.855, 1.031; physicians 3.964, 0.844). Additionally, physicians have been known to change their practice based on discussions with MRs (MRs

3.950, 1.183; physicians 3.768, 1.118), moreover formulary requests made at suggestion of a MRs (MRs 3.838, 1.074 Physicians 3.804, 1.007) further highlighting the high influence of MRs in this regard. Information presented at the conference has a significant and moderate influence on the prescribing decisions of physicians. The scores for MRs were 3.497 (mean) and 1.150 (S.D), while for physicians they were 3.571 and 0.821 (as per table 3).

**Inferential Data Analysis**

The data was first screened using SPSS version 20, which is a statistical package for the social sciences. According to Hair et al. (2017), the data was analyzed for missing values, outliers, and questions about normality. Second, according to Hair et al. (2017), PLS-SEM was used to evaluate the data. We utilize Henseler's MGA test to look at how the two sets of path coefficients differ from one another. These approaches are the most meticulous and comprehensive ways to conduct PLS-SEM analysis (Rasoolimanesh et al., 2022; Sarstedt et al., 2011). When using Henseler's MGA approach, a p-value of differences between path coefficients of less than 0.05 or larger than 0.95 indicates significant variances between the paths in the groups at the 5% level (Henseler et al., 2009).

The data was divided into two sets for the purpose of applying the MGA: one set had 276 samples of MRs, while the other set contained 115 samples of physicians. Following the advice of Hair et al. (2017), we additionally checked for measurement invariance of composites (MICOM), discriminant validity, and convergent validity. The study's data as described by the descriptive analysis's findings, are shown in Table 3.
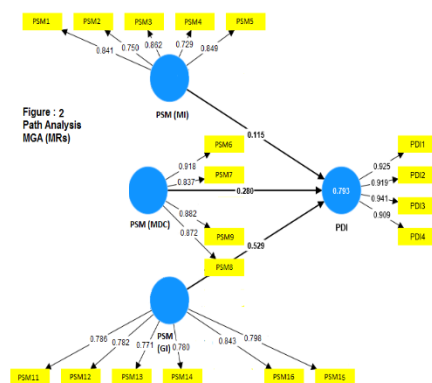
*Figure 2*
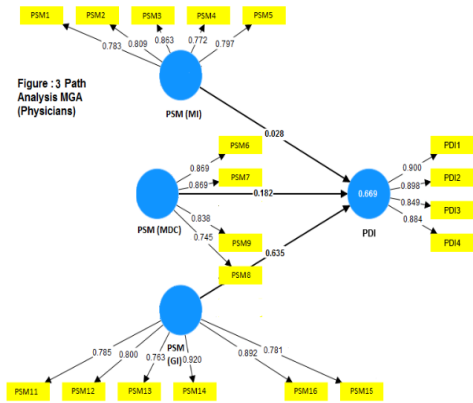*Path Analysis (MGA) MRs Results*

*Figure 3*
*Path Analysis (MGA) Physicians Results*



## Results

## Model assessment using partial least squares structural equation modeling

In order to evaluate internal consistency, convergent and discriminant validity, the outer measurement model incorporates composite reliability (CR) and average variance extracted (AVE), respectively (Hair et al., 2017). According to Hair et al. (2017), Cronbach's alpha and CR were used to evaluate the data's trustworthiness. Figure 2 shows the sample factor loadings MRs data and figure 3 shows the measurement item factor loadings (physicians data). We utilized Smart PLS 4.0 (Ringle et al. 2015) to conduct data analysis using a three-step approach (measurement, structural, and multi-group model) as recommended by Anderson and Gerbing (1988). During the measurement model analysis, we evaluated the convergent and discriminant analysis based on the recommendations of Hair et al. (2014).

They proposed that the loading should be greater than 0.708, the composite reliability should exceed 0.7, and the average variance extracted should be higher than 0.5, as shown in Table 4, as all values of these measures comply with threshold values. Results showed that discriminant validity has been proven using the heterotrait-monotrait (HTMT) 0.90 to assess it (Henseler, 2017, Table 5).

## Measurement invariance of composites analysis

According to Hessler et al. (2016), measurement invariance was assessed using the MICOM procedure in the PLS-SEM technique before conducting MGA. MICOM evaluates compositional

invariance, equal means and variances, and configurational invariance; these are its three primary operational areas of emphasis. We verified twice (Rasoolimanesh et al., 2022) that the group-specific variations in PLS-SEM results of the MGA can only be assessed by comparing and evaluating the partial measurement invariance (Table 6).

**Assessment of the structural model**

The structural model and PLS-MGA test were administered to both samples in the second stage of the investigation. Table 7 displays the results of hypothesis testing with 1,000 bootstrap re-samples. H1 was supported in the MRs data (b 0.210, $p<0.05$).

However, it did not receive support from the physicians data (b 0.231, $p>0.05$). H2 was unsupported in the MRs data, similarly the physicians data, was found to be unsupported (b 0.087, $p> 0.05$) (b 0.090, $p> 0.05$) respectively. H3 was found to be supported across all datasets, including, the MRs data (b 0.628, $p< 0.05$), and the physicians data (b 0.505, $p< 0.05$), refer to Table 7. Specifically, the findings indicate a strong connection between the dimensions of personal selling malpractices and the prescribing behavior of physicians as indicated by both profession data.

Table 4
Cronbach's alpha, Composite reliability and Average Variance Extracted

| Construct | Group MRs Profession | | | Group Physicians Profession | | |
|---|---|---|---|---|---|---|
| | Cronbach Alpha | Composite Reliability | Average Variance Extracted | Cronbach Alpha | Composite Reliability | Average Variance Extracted |
| GI | 0.935 | 0.936 | 0.618 | 0.924 | 0.925 | 0.578 |
| MDC | 0.933 | 0.933 | 0.702 | 0.901 | 0.902 | 0.608 |
| MI | 0.915 | 0.914 | 0.681 | 0.902 | 0.901 | 0.647 |
| PDI | 0.943 | 0.943 | 0.804 | 0.906 | 0.906 | 0.708 |

Table 5

| Construct | Group MRs Profession | | | | Group Physicians Profession | | | |
|---|---|---|---|---|---|---|---|---|
| | GI | MDC | MI | PDI | GI | MDC | MI | PDI |
| GI | | | | | | | | |
| MDC | 0.879 | | | | 0.888 | | | |
| MI | 0.898 | 0.879 | | | 0.879 | 0.899 | | |
| PDI | 0.869 | 0.890 | 0.855 | | 0.877 | 0.855 | 0.852 | |

Table 6
Results of MICOM using permutation

| Constructs | Configural invariences same algorithm for both group | Compositional invariance (Correlation) Confidence interval (CIs) | | Partial measurement invariance established | Differences | Equal mean value Confidence interval (CIs) | Differences | Equal variance Confidence interval (CIs) | Full measurement invariance established |
|---|---|---|---|---|---|---|---|---|---|
| Giving Incentives | Yes | 0.994 | [0.988, 1.000] | Yes | —0.350 | [—0.201, 0.196] | —0.001 | —0.262, 0.242 | Yes |
| Making Disparaging Remarks about Comptetitors | Yes | 0.996 | [0.984, 1.000] | Yes | —0.270 | [—0.192, 0.199] | —0.003 | —0.321, 0.316 | Yes |
| Providing Misleading & Incomplete Information | Yes | 0.997 | [0.991, 1.000] | Yes | —0.290 | [—0.203, 0.191] | 0.001 | —0.309, 0.324 | Yes |
| Prescribing Decisions | Yes | 0.996 | [0.984, 1.000] | Yes | —0.325 | [—0.192, 0.199] | —0.004 | —0.321, 0.316 | Yes |

Table 7
Hypotheses Testing Results Relationship between Malpractices Sub Dimensions and Physicians Prescribing Decision Influences

| Hypothses | Relationship | MRs PROFESSION | | | | | PHYSICIANS PROFESSION | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Beta | mean (M) | Std.Dev | T-Stat | P values | Beta | mean (M) | Std.Dev | T-Stat | P values |
| H1 | MI -> PDI | 0.210 | 0.210 | 0.102 | 2.059 | 0.040 | 0.231 | 0.215 | 0.264 | 0.874 | 0.382 |
| H2 | MDC -> PDI | 0.087 | 0.085 | 0.081 | 1.073 | 0.283 | 0.090 | 0.106 | 0.134 | 0.674 | 0.501 |
| H3 | GI -> PDI | 0.628 | 0.630 | 0.082 | 7.659 | 0.000 | 0.505 | 0.506 | 0.202 | 2.503 | 0.012 |

Table 8
Hypotheses Testing Results Multi-group Analysis (MGA)

| | Relationship | MRs Std. Beta CIs (Bias Corrected) | | Physicians Std. Beta CIs (Bias Corrected) | Path Coefficient Differ ence | T-Va lu e | P-Value Permut ation | Supp orted |
|---|---|---|---|---|---|---|---|---|
| H 4 | Providing misleading and Incomplete information-> Physician Decision Influences | 0.515 (-0.078,0.32 2) | > | 0.028 (-0.226,0.29 2) | 0.48 7 | 1.13 8 | 0.255 | Not Suppo rted |
| H 5 | Making Disparaging remarks about Competitors-> Physician Decision Influences | 0.280 (0.085,0.48 7) | > | 0.182 (-0.184,0.56 0) | 0.09 8 | 2.71 6 | 0.007 | Suppo rted |
| H 6 | Giving Incentives -> Physician Decision Influences | 0.529 (0.378, 0.663) | < | 0.635 (0.368,0.9 38) | -0.10 6 | 4.47 1 | 0.001 | Suppo rted |

**Multi-group analysis**

Using a multi group (MGA) and the permutation method, we find that medical representatives and physicians' subsamples vary significantly in how much of an influence giving incentives, making disparaging comments about competitors, and providing incomplete or misleading information has on physicians' prescribing decisions. The PLS-MGA test evaluates the observed distribution of the bootstrap results, rather than making distributional assumptions (Henseler et al., 2009). First, let's compare the estimates from the group-centered bootstrap. The variations in the path coefficients were then examined across the two data sets, and the findings are presented in Table 8. Based on Matthews' research from 2017, a permutation p-value of less than 0.10 indicates a notable distinction between the two groups of interest. There is a noticeable contrast in the way medical representatives and physicians approach their prescribing decisions, which can be seen in their attitudes towards incentives and disparaging competitors. It is clear from the permutation p-values of 0.001 and 0.007 in Table 8. In terms of the effect on physicians' decision-making process of receiving inaccurate or partial information, this study found no statistically significant difference between medical representatives and physicians (H4).

## Discussion And Conclusion

This study explores the connection between unethical pharmaceutical marketing practices such as providing misleading and incomplete information, making disparaging remarks about competitors and their products and giving incentives impact on physicians prescribing decisions. According to the relationships and significance values in Table 7, the findings from hypothesis

testing, based on 1,000 bootstrap re-samples, are displayed, the data from MRs supported H1 (b 0.210, p<0.05). However, the data from physicians did not provide support (b 0.231, p>0.05). The H2 hypothesis was not supported in both the MRs data and the physicians' data, with respective results of b 0.087, p> 0.05 and b 0.090, p> 0.05. H3 was supported across all datasets, including the data from MRs (b 0.628, p< 0.05) and physicians (b 0.505, p< 0.05), as shown in Table 7.

The findings suggest a significant positive relationship between personal selling malpractices and the prescribing behavior physicians, as indicated by both profession datasets, hence we concluded that providing misleading and incomplete information and giving incentives have a positive impact on physicians' decision to prescribe the specific MRs company drug.
When it comes to the current literature on MRs' ethical behavior, our study makes a substantial contribution. Some have argued that this study theoretically added to the literature on MRs' ethical behavior by providing new insights into the topic. In fact, there are a number of ethical concerns raised by marketing studies, such as misleading and incomplete information, incentives, and making disparaging remarks about competitors and their products, it is important to note that there are some disparity among MRs and physicians opinions towards the intensity on the matter. This study presents findings that may be interpreted as suggesting that medical representatives are more accepting and rationalizing of certain unethical practices such as providing misleading and incomplete information as well as giving incentives to physicians are positively influences physicians prescribing decisions. Such a result may suggest potential shifts in moral values, particularly in relation to healthcare values and principles (Skandrani & Sghaier, 2016). However, physicians may hold a different opinion and believe that medical representatives may cross ethical boundaries by giving incentives to physicians and up to what extent physicians agreed that giving incentives influences physicians prescribing decisions (Suriyaprakash and Chinnu Stephan, 2022). Pharma company managers may gain valuable information into potential MR ethical dilemmas by identifying these problems. According to Thomas et al. (2004) and Schwepker and Hartline (2005), there are some who believe that identifying these unethical actions could be highly beneficial for the PI's reputation and customer connections. A study conducted by Sillup and Porth (2008), they examined prominent newspaper articles in the USA and discovered several ethical concerns in the pharmaceutical industry. These concerns included drug detailing, data disclosure, adverse reactions, and drug safety are the common issues our

finding are similar to that study. Our results are consistent with those of Hsu et al. (2009), who found that medical representatives' unethical behavior stems from factors like working in a loss frame pattern, being motivated by high commissions, having loose behavior control, and having a low perception of marketing norms. As per several researchers have made valuable contributions to our understanding by studying the effects of certain factors, such as gifts given by pharmaceutical sales reps to doctors, on the prescribing habits of physicians. Most importantly, there is a significant lack of empirical studies, our findings are consistent with a study conducted on this topic (Zipkin & Steinman 2005; Kotler, 2004; Verschoor, 2006; Lassman, 2007).

According to the findings, the making disparaging remarks about competitors and giving incentives is more important for physicians than medical representatives toward prescribing decisions. For instance, there is a notable positive relation between making disparaging remarks about competitors and the influences of physicians prescribing decisions (b = 0.289, MRs), which is higher compared to physicians (b = 0.182, Physicians). Similarly, the research findings indicate that this phenomenon may be due to the fact that physicians tend to have more likely to influences making disparaging remarks about competitors because of their lacking in industry awareness, resulting in higher rates of prescription. For instance, there is a notable positive relation between giving incentives and the tendency of physicians prescribing decisions (b = 0.529, MRs), which is lesser compared to physicians (b = 0.635, Physicians). Similarly, the research findings indicate that this phenomenon may be due to the fact that medical representatives tend to have a more favorable attitude towards drug promotion incentives because of their influences on physicians prescribing decisions, resulting in higher rates of prescription.

In relation to the influence of personal selling malpractices sub dimensions such as providing misleading and incomplete information, making disparaging remarks about competitors and giving incentives plays a role in the connection among unethical practices and prescribing behavior of physicians. The results of the relationship confirmed the theoretical concept of factors like, which was based on the TPB (Ajzen, 1991). This indicates that the unethical promotion of drugs has an impact on the physicians' decision. The findings were also supported by Skandrani & Sghaier, (2016), who found that unethical practices in drug promotion has a strong impact on a physician's decision to prescribe medication. The study's findings

demonstrated that medical representatives' unethical practices can significantly impact physicians prescribing decisions by reinforcing unethical patterns. It has been found that unethical practices such as making disparaging remarks about competitors and giving incentives has a direct impact on the physicians decision, which in turn affects their prescribing behavior (Ahmed et al., 2020; Murshid et al., 2019). These relationships suggest a potential link between unethical practices and the physician prescribing, as indicated by Abdul Waheed et al. (2011).

**Practical Implication**

The study suggests a model for pharmaceutical industry policymakers and marketing managers to understand unethical practices in medical reps, promoting ethical promotional tools, and enhancing brand loyalty among physicians and other stakeholders, potentially leading to cost savings and improved marketing efficiency. Policy decision-makers should consider unethical practices affecting physician prescriptions and establish guidelines for interaction between medical reps and physicians. Regular updates and strict enforcement can minimize malpractices and discourage unethical practices. Ultimately, our study findings offer valuable insights for creating interventions that can provoke ethical prescribing decision according to prescription guidelines, which will improve physicians and medical reps interaction as well as better patient outcomes. Our research findings indicate that physicians' prescribing decisions is influenced by malpractices, regardless of the cost-effectiveness of the drugs. This suggests that other factors may play a role in their decision-making process. Additional training in analyzing reps and physicians' interaction impact on prescribing decision could be beneficial for both medical reps and physicians.

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