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Evaluating the Impact of Organizational Investments in Medical Sales Representatives on Pharmaceutical Performance through Physician Promotion Channels

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ABSTRACT

Pharmaceutical companies globally and in the United States are restricted from directly marketing their products to end users, specifically patients, due to regulatory guidelines set by relevant authorities. As a result, the pharmaceutical industry depends heavily on medical sales representatives to promote products to healthcare providers, who subsequently prescribe these products to patients, with significant investments dedicated to promotional activities. However, evaluating the return on investment in medical sales representatives' efforts to influence healthcare providers' prescribing decisions to increase product prescriptions to end users is crucial for assessing overall marketing effectiveness. This study investigated whether organizational investments in medical sales representatives' promotional efforts via healthcare provider endorsements significantly enhance organizational performance. Adopting a deductive research approach and a quantitative quasi-experimental design, the study surveyed a random sample of 338 respondents, including senior managers, middle managers, and medical sales representatives, selected from 368 registered pharmaceutical companies operating in the U.S. Data were collected through a structured questionnaire using a 1–5 scale to measure each item. The collected data were analyzed using R-Studio for correlation, linear regression, and path analysis. The study findings reveal that relationship marketing in the pharmaceutical sector emphasizes the pivotal role of incentivized medical sales representatives in building trust, strengthening prescriber (physician) loyalty, and achieving competitive advantage, all while addressing ethical and regulatory complexities.

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Introduction

Achieving organizational goals in today's competitive business environment requires companies to strategically orient their functions around customer needs. As suggest, a customer-focused approach, where all departments prioritize customer interests, can support an organization's overarching objectives [1]. A vital method for embedding this customer orientation is marketing management, which drives each functional area to treat customer needs as central [2]. Within marketing management, understanding the target market, analyzing customer needs and behaviors, and creating strategies for product, price, promotion, and distribution are crucial to aligning with an organization's strategic goals [2]. Among these strategies, marketing communication, specifically promotion, is a primary focus for marketing managers, who aim to convey relevant information to current and potential customers. A marketing communication strategy encompasses a range of activities that marketing managers design to inform and influence customer perceptions [3]. Effective communication strategies incorporate a mix of advertising, public relations, personal selling, event management, and sponsorships, enabling a company to reinforce its brand message across channels [4]. However, fully integrating all marketing communication elements is not always feasible across industries, particularly in heavily regulated pharmaceutical fields. In the pharmaceutical industry, promotional activities face unique constraints, with government regulations significantly impacting how products can be marketed. Unlike other industries, the pharmaceutical sector is subject to stringent controls to maintain product safety, prevent unethical practices, and ensure quality [5].

Due to these regulations, pharmaceutical companies are restricted from directly promoting their products to patients and end users. Instead, they rely on qualified healthcare professionals as intermediaries. This restriction is especially pronounced in the United States, where authorities impose rigorous guidelines governing pharmaceutical marketing and promotional activities directed at medical professionals [6]. Pharmaceutical firms thus rely on medical sales representatives, often referred to as drug reps, to promote products indirectly to end users by persuading healthcare providers to prescribe these products. This indirect approach has proven influential, as numerous studies show that interactions with sales representatives can increase prescriptions and overall marketing promotion costs. In the U.S., pharmaceutical companies devote significant resources to employing medical sales representatives, who inform doctors about their products' benefits

and encourage their prescription to patients. However, as note, assessing whether the substantial investment in these promotional activities yields a worthwhile return regarding marketing effectiveness is essential [7]. highlights that sales representatives notably impact physicians' prescription behaviors, suggesting that pharmaceutical companies can employ various promotional tools to maximize returns [8]. However, there remains a gap in research evaluating whether investing in sales representatives leads to enhanced organizational performance [8]. This study addresses this gap by investigating the effectiveness of pharmaceutical sales representatives in promoting products through healthcare provider endorsements.

The COVID-19 pandemic provided an unexpected context for evaluating the relationship between sales representative visits and prescription rates. During this period, restrictions on in-person interactions led to a temporary halt in sales representative activities. In the U.S., as in other countries, physical restrictions were imposed to curb the spread of COVID-19, which affected in-person marketing efforts [9]. Nevertheless, despite limited contact with medical sales representatives, the pharmaceutical industry recorded significant growth, suggesting that the absence of direct promotional activities did not necessarily inhibit sales performance. This observation raises critical questions about the value of ongoing investment in medical sales representatives. Given this context, the present study seeks to determine if a measurable relationship exists between medical sales representatives' promotions to healthcare providers and the resulting sales performance. Using a deductive research approach and a quasi-experimental design, the study surveyed a sample of pharmaceutical companies' senior managers, middle managers, and medical sales representatives. Data analysis employed correlation, linear regression, and path analysis to assess the extent to which sales representatives influence prescription rates and organizational performance [10]. By exploring this relationship, the study aimed to contribute to the broader understanding of marketing effectiveness within the pharmaceutical sector and provide insights into whether continued investments in sales representatives are justifiable for long-term growth.

Research Questions and Objectives
The global pharmaceutical market was valued at approximately USD 1.2 trillion in 2018 and is projected to grow to USD 1.5 trillion by 2023 [11]. Reflecting this global trend, the U.S. pharmaceutical market has also experienced substantial growth and remains one of the largest healthcare markets worldwide. In this industry, medical sales representatives are critical in promoting pharmaceutical products to healthcare providers, who then prescribe them to patients [12]. However, given the significant portion of marketing budgets allocated to these promotional efforts, there is a pressing need to evaluate the return on investment (ROI) in these strategies [13]. Additional promotional tools include sales promotions, journal advertising, direct marketing, and personal selling activities specifically targeted at the medical community [14]. Moreover, government regulations influence pharmaceutical marketing practices, placing pressure on companies to ensure cost-effectiveness and compliance in their marketing strategies [15]. In this context, a key challenge for the U.S. pharmaceutical sector is assessing the effectiveness of personal selling investments and understanding whether these efforts contribute meaningfully to corporate sustainability and performance. This study addresses several research questions: (1) To what extent do medical sales representatives' efforts influence organizational sales performance? (2) How efficiently do personal selling investments in marketing communication drive organizational success? (3) Can organizations within the pharmaceutical industry predict performance outcomes based on personal selling investments? (4) Can the investments in medical representatives be justified based on the increased sales achieved through doctors' prescribing behaviors? The findings of this study have both academic and professional applications. For academia, insights from this research could contribute to theory development within marketing management and pharmaceutical promotion. Additionally, the study offers valuable insights to marketing professionals, especially those managing pharmaceutical brands on both local and global scales, and serves as a basis for future research. Policymakers within the U.S. pharmaceutical sector may also benefit from these findings, particularly in formulating investment strategies and regulatory guidelines to enhance the sustainable impact of pharmaceutical promotions [16].

Hypotheses
Building upon a comprehensive literature review, this study examines specific hypotheses developed to explore the relationships among personal selling, organizational performance, and investment in medical sales representatives within the pharmaceutical industry in the United States. The hypotheses are formulated as follows:

- **H1:** Personal selling efforts by medical sales representatives have a positive impact on the performance of organizations within the U.S. pharmaceutical industry.
- **H2:** Personal selling efforts by medical sales representatives positively influence the level of investment in these representatives by organizations within the U.S. pharmaceutical industry.
- **H3:** Organizational investment in medical sales representatives positively affects the sales team's personal selling efforts within the U.S. pharmaceutical industry.
- **H4:** Organizational investment in medical sales representatives mediates the relationship between personal selling efforts by medical sales representatives and organizational performance in the U.S. pharmaceutical industry.

These hypotheses serve as a foundation for examining the interconnected roles of personal selling and investment strategies in influencing overall organizational performance in a highly regulated environment.

Methods
This study justified the use of a deductive approach, as it aimed to validate existing theories within the context of three key variables: personal selling through medical doctor promotions (predictor), investments in medical sales representatives (mediator), and organizational performance (target). Most measurement dimensions for these variables were derived from a thorough literature review, though confirming metrics for organizational performance presented challenges. Consequently, the study gathered secondary data from industry sources to validate these measures, reinforce theory, and address potential knowledge gaps. Following a quantitative quasi-experimental design, inferential techniques, particularly regression analysis were employed to generalize findings and assess the mediating effects of investments in medical sales representatives on the relationship between personal selling through medical promotions and organizational performance [17-19]. This study used stratified sampling with a frame that included all 368 pharmaceutical companies registered and operating in the United States, focusing on Senior Managers, Middle Managers, and Medical Sales Representatives. The sample

comprised 2,192 individuals: 101 senior managers, 331 middle managers, and 1,761 medical sales representatives. A pilot study with thirty participants was conducted to establish reliability, using Cronbach's Alpha to assess internal reliability. Reliability was further confirmed by calculating correlation coefficients between the pilot and overall study results. The questionnaire included a consent statement, contact details for clarification, and two sections: Part A for demographic data and Part B for variable-related data, all measured on a five-point scale [20]. The instrument was designed in Microsoft 365 Excel for data recording, with in-depth analysis performed in RStudio. One research objective was to investigate the mediating effect of organizational investment in medical sales representatives on the relationship between their promotions through medical doctors and organizational performance, using ordinary least squares (OLS) regression modeling, correlation, and ANOVA along with descriptive statistics for data summarization [18,19].

Analysis and Results

A structured questionnaire was developed for a pilot study with 30 randomly selected industry respondents. It covered 38 items on organizational performance (V1), 10 items on investments in medical sales representatives (V2), and 20 items on personnel selling by medical sales representatives (V3). It was analyzed using RStudio 4.1.2. Internal reliability assessed using a pre-calibrated Cronbach's Alpha threshold of 0.7, yielded an alpha of 0.93 for organizational sales performance (38 items), 0.72 for investment in medical sales representatives (10 items), and 0.89 for personal selling through medical doctor promotions (20 items) [20]. Therefore, based on Cronbach's Alpha reliability scores, all constructs demonstrate high reliability and are retained for further analysis [21]. The total sample size for the survey included 338 respondents randomly selected from various pharmaceutical companies registered in the US. A mean estimate was calculated to create a composite value based on all items within the construct [22].

Running summary statistics is essential to understanding each composite variable's central tendency and variability [22]. The dataset includes three composite variables and 338 observations, with no missing data. The mean values of all variables are close to 3, and the standard deviations, ranging from 0.21 to 0.25, are negligible. The Shapiro-Wilk normality test confirmed the non-normal distribution [23]. See below Figure The p-values from the Shapiro-Wilk normality test indicated the need to scale the variables for normalization before modeling and further testing.
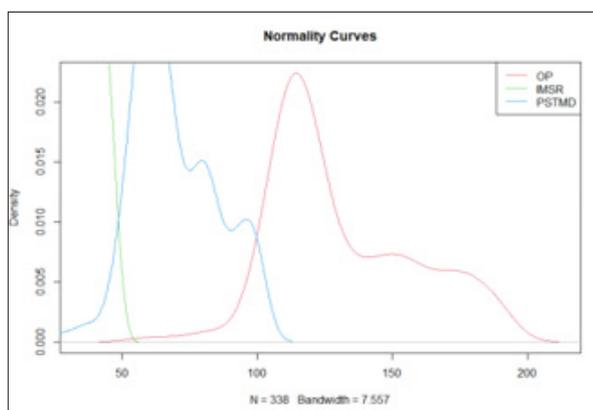

Figure 1: Normality Curves

Source: Output of RStudio (4.1.2 version)

This study applied a logarithmic transformation among common data treatment strategies to normalize the data; however, complete normality across all variables was not achieved even with this approach [24]. Before modeling for simple and multiple linear regression, tests were conducted to assess correlation and multicollinearit to understand inflation levels between independent variables, as illustrated in Figure 2, showing the correlation between personal selling through medical doctor promotions (PSTMD) and investments in medical sales representatives (IMSR) [25].
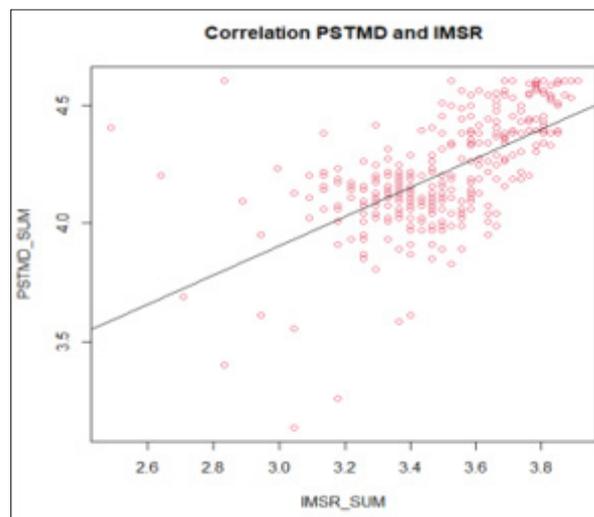

Figure 2: Correlation Plot for PSTMD and IMSR

Source: Output of RStudio (4.1.2 version)

The figure above (Figure 2) demonstrates a relationship (r = 0.6) between personal selling through medical doctor promotions (PSTMD) and investments in medical sales representatives (IMSR). This correlation, while positive, could be more robust, suggesting that it does not pose a significant issue for regression modeling [22]. A Variance Inflation Factor (VIF) test was conducted to further validate this relationship based on a basic regression model outlined by [26]. The test results in Table 1 show that VIF scores are below five. As a result, the independent variables, PSTMD and IMSR, are retained for further analysis.

Table 1: Variance Inflation Factor

Factor	Score
PSTMD	1.580477
IMSR	1.580478

Source: Output of RStudio (4.1.2 version)

Demographic Description

The sample for this study predominantly consisted of male respondents, with fewer female participants. Furthermore, the age distribution among male respondents was generally higher than that of female respondents. Despite this, the median age for both male and female respondents was identical. The interquartile range for females, representing the middle 50% of the female respondents, was comparatively broader. Additionally, male respondents were predominantly employed within the age range of 20 to 55 (see Figure 3).
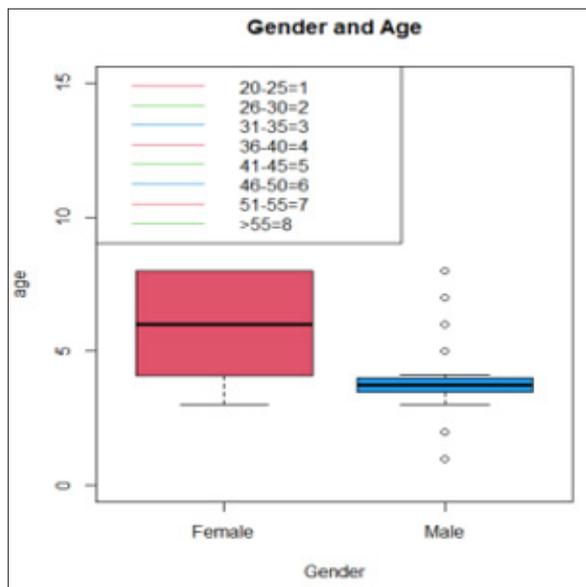
Figure 3: Gender and Age Box Plots

Source: Output of RStudio (4.1.2 version)

The middle manager category represents most of the randomly drawn sample. In contrast, senior managers and medical sales representatives occupy similar positions, with numerous outliers observed across the model. Middle managers show the highest concentration in age distribution, with most individuals falling within the 26 to 55-year range. The age distributions for senior managers and medical sales representatives exhibit similar patterns. Notably, a distinctive feature of the analysis is that all employee categories included in this study exhibit nearly identical median age values (see Figure 4 below).
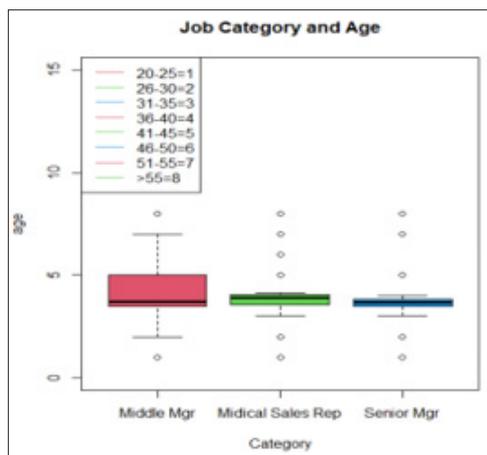

Figure 4: Job Category and Age Box Plots

Source: Output of RStudio (4.1.2 version)

Figure 5 depicts the age distribution relative to the work experience of the respondents. Work experience is categorized on a scale from 1 to 6: employees with less than one year of experience are labeled as 1, those with 1-5 years as 2, 6-10 years as 3, 11-15 years as 4, 16-20 years as 5, and those with more than 20 years of experience as 6. To improve readability, the y-axis limits are set between -1 and 15. As shown in the figure, most employees fall within the work experience range of one to fifteen years.
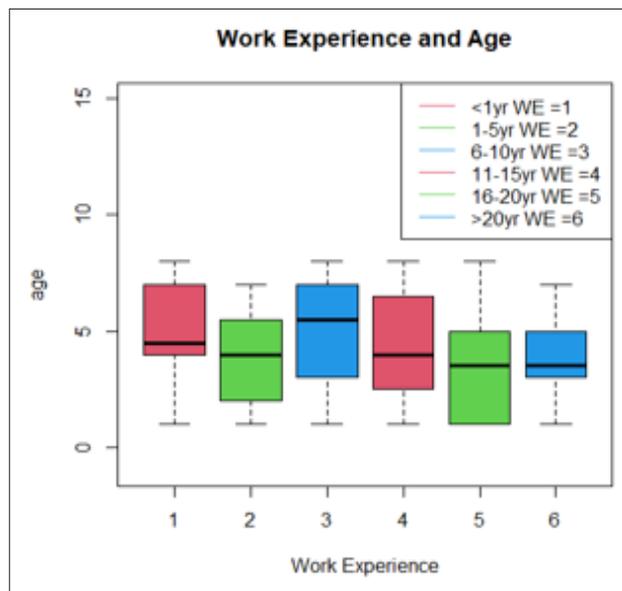

Figure 5: Work Experience and Age Box Plots

Source: Output of RStudio (4.1.2 version)

Model Building
A linear regression model was applied to assess the proportional change in organizational sales performance (target) in response to a unit change in personal selling through medical doctor promotions (predictor)—all residuals aligned along the line, confirming the normality of the standardized residuals. See Figure 6 below.
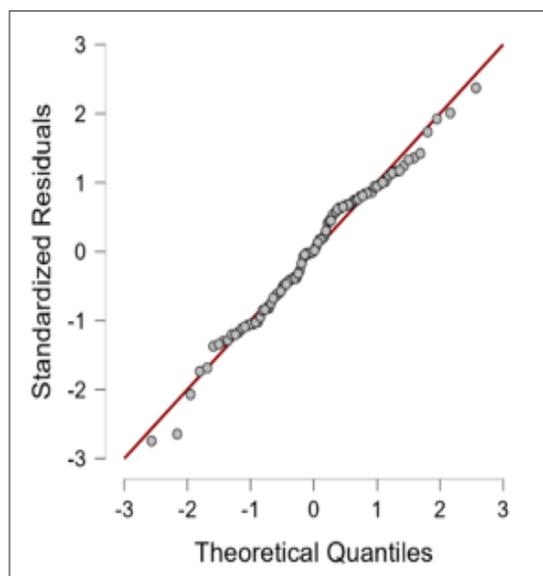

Figure 6: Q-Q Plot: Standardized Residuals

Source: Output of JASP (0.15.0.0 version)

The following summarizes the regression model developed to assess the degree of PSTMD's influence on OP

Table 2: Model Summary: PSTMD and OP

Model	R	R²	Adjusted R²	RMSE
H_0	0.000	0.000	0.000	26.554
H_1	0.827	0.684	0.683	14.945

Source: Output of JASP (0.15.0.0 version)

The analysis addressing the first research question, "To what extent do medical sales representatives' efforts impact organizational sales performance?" reveals that the coefficient of determination (R^2) is 0.68, as shown in Table 2. This indicates that 68% of the variance in organizational sales performance can be explained by the efforts of medical sales representatives, specifically through their promotions via medical doctors. The result is statistically significant ($p < 0.05$).

Table 3: Coefficients: PSTMD and OP

Model	Unstandardized Coefficient	Standard Error	Standardized Coefficient	t	p
H_0	131.58	1.449	-	90.829	< .001
H_1	32.503	3.772	-	8.616	< .001
PSTMD_SUM	1.433	0.053	0.827	26.9	< .001

Source: Output of JASP (0.15.0.0 version)

A linear regression analysis assessed the impact of personal selling through medical doctor promotions (PSTMD) on organizational sales performance (OP). Examination of standardized residuals indicated no outliers (Std. Residual Min. = -2.76, Std. Residual Max. = 2.37). The residual plot confirmed both homoscedasticity and normality of residuals. PSTMD was found to have a statistically significant positive effect on OP, $F_{(1,334)} = 723.63$, $p < .05$, explaining 68% of the variance in OP with an adjusted R^2 of 0.68. According to the coefficient presented in Table 4.9 (B = 1.43), each one-unit increase in PSTMD corresponds to a 1.43-unit increase in OP. Therefore, the regression model demonstrates a positive effect of PSTMD on organizational sales performance [17].

The following section presents an analysis addressing the second research question: How effectively do investments in personal selling within marketing communications drive organizational success? The coefficient of determination (R^2) value in Table 4 is 0.57, indicating that 57% of the variance in organizational sales performance (OP) can be predicted based on investments in medical sales representatives (IMSR). This result is statistically significant, with a p-value of less than 0.05.

Table 4: Model Summary: IMSR and OP

Model	R	R²	Adjusted R²	RMSE
H_0	0.000	0.000	0.000	26.554
H_1	0.754	0.568	0.567	17.479

Source: Output of JASP (0.15.0.0 version)

Table 5: Coefficients: IMSR and OP

Model		Unstandardized	Standard Error	Standardized	t	p
H_0	(Intercept)	131.580	1.449		90.829	< .001
H_1	(Intercept)	36.752	4.624		7.948	< .001
	IMSR_SUM	2.803	0.134	0.754	20.958	< .001

Source: Output of JASP (0.15.0.0 version)

A linear regression analysis examined the impact of investments in medical sales representatives (IMSR) on organizational sales performance (OP). The analysis of standardized residuals indicated no outliers (Std. Residual Min. = -3.24, Std. Residual Max. = 3.01), with the residual plot confirming homoscedasticity and normality. IMSR was found to have a significant positive effect on OP, $F_{(1,334)} = 439.22$, $p < .05$, explaining 57% of the variance (adjusted $R^2 = 0.57$). As shown in Table 4.11, the coefficient of 2.80 suggests that each one-unit increase in IMSR corresponds to a 2.80-unit increase in OP, indicating a positive influence [17].

The following sections address the third research question: Can organizations in the pharmaceutical industry predict performance outcomes based on investments in personal selling? To explore this, we applied a regression equation to predict organizational sales. First, we substituted the value of 150 into the equation, resulting in OP = 36.75 + 2.80 * 150 + 0.13. We then multiplied 2.80 by 150, yielding 420. Adding this to the constant value of 36.75 resulted in 456.75. Finally, we added 0.13, producing a predicted sales value of OP = 456.88. This calculation enabled us to estimate organizational sales based on the given variables, providing insight into the potential relationship between investments in personal selling and performance outcomes. For the fourth research question, can investments in medical representatives be justified based on the increased sales achieved through doctors' prescribing behaviors? Structural Equation Modeling (SEM) was applied to address this inquiry [21]. SEM was employed to conduct path analysis using bootstrapping with 1,000 replications. The path analysis is illustrated in the following figure (Figure 6).
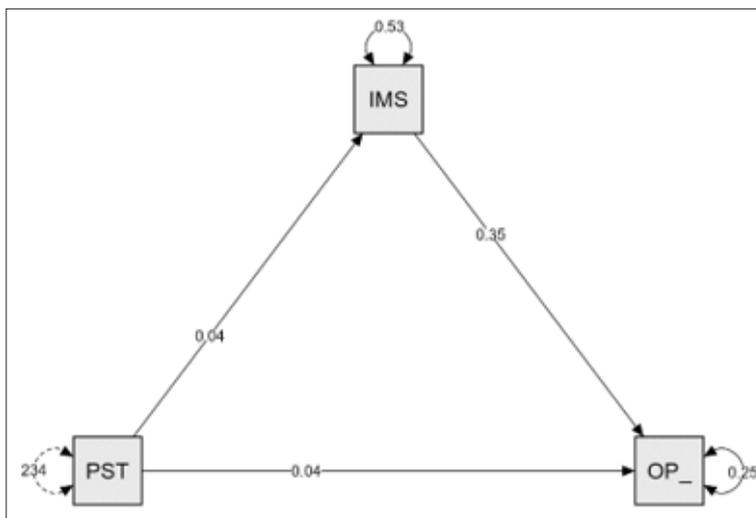
Figure 7: Path Plot: PSTMD – IMSR - OP

Source: Output of JASP (0.15.0.0 version)

The following table illustrates the parameter estimates of path analysis performed using an SEM analysis.

Table 6: Coefficients: SEM – Parameter Estimates

Direct Effects

							95% Confidence Interval	
			Estimate	Std. Error	z-value	p	Lower	Upper
PSTMD_ SUM	→	OP_Sum	0.038	0.002	15.718	15.718	0.031	0.046

Note: Delta method standard errors, bias-corrected percentile bootstrap confidence intervals, ML estimator.

Indirect Effects

					Estimate	Std. Error	z-value	p	95% Confidence Interval	
									Lower	Upper
PSTMD_ SUM	→	IMSR_ SUM	→	OP_Sum	0.016	0.002	8.308	< .001	0.010	0.021

Note: Delta method standard errors, bias-corrected percentile bootstrap confidence intervals, ML estimator.

Total Effects

						95% Confidence Interval	
			Estimate	Std. Error	z-value	p	Lower	Upper
PSTMD_ SUM	→	OP_Sum	0.054	0.002	26.981	< .001	0.050	0.058

Note: Delta method standard errors, bias-corrected percentile bootstrap confidence intervals, ML estimator.

Source: Output of JASP (0.15.0.0 version)

As the table above shows, the direct effect demonstrates that a one-unit increase in PSTMD results in a 0.038-unit increase in OP, which is statistically significant with a p-value less than 0.05. In contrast, when examining the indirect path effect, where IMSR serves as a mediator, the increase in OP is only 0.016. Nevertheless, it remains statistically significant with a p-value of less than 0.05. The path analysis indicates that IMSR mediates the relationship between PSTMD and OP, as proposed by, within the context of the pharmaceutical industry in the United States [21]. Simple linear regression was employed to test the first, second, and third hypotheses. In contrast, structural equation modeling was utilized to conduct a path analysis, which estimated the coefficients to assess the mediating effect of IMSR on the relationship between PSTMD and OP.

Discussion

The concept of the marketing mix, specifically the 4 Ps, has evolved significantly over time, contributing to the progression of marketing theory and practice. Initially, the 4 Ps—product, price, place, and promotion—became foundational to marketing strategy and were widely regarded as groundbreaking in organizing marketing activities. However, as business environments have evolved, particularly with the rise of new technological developments and changing consumer behaviors, it has become increasingly apparent that the "controllable factors" of the marketing mix require closer examination to stay relevant [4]. While the 4 Ps framework remains influential, its application must be continually adapted to the complexities of modern industries, such as the pharmaceutical sector. The significance of the marketing mix lies in its ability to frame marketing as a systematic, professional function within organizations. By distinguishing marketing from other organizational activities, the 4 Ps model allows clearer assigning of marketing responsibilities to specialized experts and provides tools to alter a company's competitive position in the marketplace [9]. This framework's importance is underscored by its utility in guiding companies' strategic decisions, particularly as they navigate the competitive landscape. Despite its contributions, the model has faced criticism and has been the subject of ongoing debates in academic and professional circles. Some scholars, referred to as "conservatives," argue that the 4 Ps can adapt to environmental shifts by incorporating new elements within the four categories. On the other hand, "revisionists" contend that the 4 Ps model is outdated and advocates for developing new marketing paradigms [27]. These debates are prevalent across various industries, including pharmaceuticals, where the complexity of modern marketing demands more nuanced strategies [28]. In the pharmaceutical industry, the marketing mix is increasingly viewed through relationship marketing, which emphasizes creating, developing, and maintaining long-term relationships between buyers and sellers. Relationship marketing is critical in sectors such as pharmaceuticals, where building trust and loyalty with medical professionals can lead to sustained business success [29]. The role of salespeople in this context is critical, as they are often the primary point of contact between pharmaceutical companies and healthcare providers. By fostering strong relationships with doctors, sales representatives influence product quality and reliability perceptions, enhancing customer satisfaction and loyalty [30]. Doctors often develop greater loyalty to individual sales representatives than to the pharmaceutical companies they represent [31].

The USA exemplifies the industry's challenges and opportunities with its large and diverse pharmaceutical market. The healthcare system is vulnerable to unethical practices, such as incentivizing doctors to prescribe specific drugs [28]. Pharmaceutical companies often use their sales forces to promote products through these incentives, a practice that raises ethical concerns but is prevalent in the industry. The role of medical sales representatives is thus critical in shaping the behavior of healthcare professionals. However, it also highlights the ethical dilemmas inherent in the marketing strategies used by pharmaceutical companies. The increasing focus on relationship marketing in business markets has prompted companies to rethink the role of their sales teams. As business environments become more interconnected, companies emphasize collaboration and information sharing with their customers [32]. In the pharmaceutical industry, sales representatives are no longer just salespeople; they are expected to act as consultants, guiding doctors in choosing the best products for their patients and reinforcing the long-term relationship between the company and

its customers [30]. This shift in the role of sales representatives reflects a broader trend in marketing, where the emphasis has moved from transactional selling to relationship-building.

Personal selling, central to this strategy, plays a pivotal role in the marketing communication mix. Through direct, face-to-face interactions, sales representatives can influence the purchasing decisions of doctors and build lasting relationships with key stakeholders [33]. Personal selling enables pharmaceutical companies to differentiate their products, provide tailored solutions to healthcare providers, and ensure that their products meet the specific needs of patients [34]. This approach helps companies retain existing customers and expands their customer base by attracting new doctors and healthcare professionals to their products [35]. The efficiency of personal selling in the pharmaceutical industry is evident, as it directly contributes to increased sales and market penetration. The growing reliance on personal selling in the pharmaceutical industry is due to several factors, including heightened competition, changing patient needs, and the complexity of medical products. Sales representatives are essential for building and maintaining relationships with doctors, who are often the key decision-makers in prescribing medications. As such, pharmaceutical companies must invest heavily in their sales forces to remain competitive and responsive to market demands [36]. Investment in medical sales representatives is seen as a strategic move to enhance the overall sales performance of pharmaceutical firms. Numerous studies have highlighted the positive correlation between organizational investments in sales representatives and improved sales outcomes [8,14,13].

The effectiveness of medical sales representatives in promoting pharmaceutical products can be significantly enhanced through incentives such as increased base salaries and performance-based bonuses. Research has shown that such incentives motivate sales representatives to increase their efforts and improve their performance [37]. The link between compensation and sales performance is well-established, with studies indicating that higher investment in sales personnel leads to better organizational outcomes [38]. Therefore, pharmaceutical companies in the USA must carefully design compensation schemes to ensure their sales teams are motivated to achieve higher sales targets and contribute to their overall success. In conclusion, personal selling remains a critical component of the marketing communication mix in the pharmaceutical industry. The role of medical sales representatives has evolved from that of a traditional salesperson to that of a consultant and relationship manager, reflecting broader shifts in marketing strategy. As companies in the pharmaceutical industry continue to invest in their sales forces, the effectiveness of personal selling will remain a key determinant of sales performance and overall organizational success. The continued investment in medical sales representatives is essential for pharmaceutical companies in the USA and other markets to maintain a competitive edge and meet the changing needs of healthcare providers and patients.

The pharmaceutical industry in the United States operates under a complex framework of legal regulations, which significantly impact marketing strategies. These constraints have led pharmaceutical companies to adopt highly strategic planning processes for their marketing campaigns, mainly targeting medical professionals in private practices and public healthcare settings [39]. Due to the legal restrictions inherent in the pharmaceutical sector, marketing managers within these organizations often strongly emphasize personal selling as a key component of their

marketing communication mix. This approach ensures optimal sales performance, mainly through frequent interactions with medical doctors. In this context, organizations must assess whether they offer competitive compensation packages and appropriate incentive schemes to motivate their medical sales representatives to meet the overall sales targets set by the company [40]. Consequently, marketing managers must collaborate closely with the human resources department to design and implement suitable policies regarding monthly pay and sales-related incentives for medical sales representatives.

Limitations

This study investigated the mediating effect of organizational investment in medical sales representatives on the relationship between medical sales representatives' promotions through medical doctors and corporate sales performance. According to the existing literature, numerous studies have explored the variables central to this investigation. However, no prior studies have been identified in the literature specifically focused on the U.S. pharmaceutical industry [41]. Consequently, this study seeks to contribute to developing new theoretical insights, addressing a gap in the current knowledge base [42]. In addition, it aims to provide a foundation for policymakers within both the organizational and industry contexts, offering valuable guidance for practical application. Several limitations were pre-identified in this study. First, the number of variables considered in exploring their relationships within the context of the study is a limitation. When a study utilizes a limited number of variables, the findings may not fully represent the complexity of the phenomena under investigation. Researchers often start with a broader set of variables and progressively reduce them using backward or forward selection based on Adjusted R-squared scores to ensure the selection of the most parsimonious set of variables [43]. Since this approach was not employed in this study, it is considered a limitation. Second, the sample size represents another limitation suggest that larger sample sizes reduce the margin of error in research findings [44]. Despite using a scientifically determined sample size, the inability to establish multiple contact points within each organization limits the sample size, which may impact the quality of the conclusions.

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