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**Title-From the Marketing Perspective to the Satisfaction-Managerial Perspective on the  
Marketing Mix In a Chain Diagnostic Lab**

**Ashish Kumar Sahdev**

**Syed Hameedur Rehman Zaini**

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**Abstract**

This study investigates the impact of various marketing mix elements on patient satisfaction from the manager's perspective in chain diagnostic laboratories. This was a descriptive cross-sectional study, and the study population was from six top-chain diagnostic laboratories in India. Forty-five questionnaires were used to collect responses from 150 decision-makers from the labs. Inferential statistical multivariate regression analysis was used to analyse the results obtained on a 5-point Likert scale. Regression analysis indicated that process and product significantly influenced patient satisfaction, with high coefficients of 0.5536 ( $p < 0.0001$ ) and 0.427 ( $p < 0.0001$ ), respectively, underscoring the importance of efficient service and a comprehensive test menu. Price also significantly affects satisfaction (coefficient 0.2067,  $p = 0.0014$ ). Physical evidence has a marginal effect (coefficient 0.212,  $p = 0.0536$ ), whereas people (coefficient -0.17,  $p = 0.1268$ ) and place (coefficient 0.1171,  $p = 0.2532$ ) have minimal impacts. Promotion had the least impact (coefficient = 0.0063,  $p = 0.9442$ ), suggesting that traditional marketing did not significantly influence satisfaction. This research addresses the knowledge gap regarding the use of a marketing mix. Laboratory administrators must prioritize these key areas to improve service delivery and expand test offerings.

**Keywords:** Healthcare marketing, Marketing mix, Healthcare services, Laboratory marketing.

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**Introduction**

Healthcare managers are increasingly embracing marketing as a vital tool for organizational growth and patient engagement (Agrawal & Singh, 2023). Managers recognize that effective marketing strategies can strengthen a hospital's image, increase visibility, and improve public awareness of healthcare offerings, ultimately helping to reach more potential patients and increasing patient satisfaction (Muspita et al., 2024). A modern and useful marketing tool for healthcare services is a marketing mix. Traditional marketing mix models, such as the 4Ps (product, price, place, and promotion), have been deemed inadequate for service marketing by numerous studies (Akroush, 2011). The unique characteristics of services, including intangibility, inseparability, perishability, and heterogeneity, create special marketing problems that require tailored strategies (Kotler, 2011). Booms' and Bitner's recommendations encompass three additional aspects, namely, people, physical evidence, and procedures. These elements, known as 3Ps, can significantly enhance customer satisfaction when incorporated into service deliveries. People are employees who deliver the service and whose competence, attitude, and interactions with customers. The process involves the procedures and flow of activities in delivering services. Physical evidence is the environment in which services are delivered and any other tangible element of service delivery, such as blood test reports in laboratory services (Yaghoubian et al., 2018). Hospitals, clinics, and other healthcare service providers should consider the influence of these seven elements on the relationship between the service provider and the patient (Catana & Toma, 2021). The key elements of the healthcare marketing mix that can improve healthcare marketing management are as follows: 1. Product and service quality 2. Pricing strategies 3. Distribution channels 4. Promotion and communication 5. Physical evidence; 6. People (staff training and development) 7. Process improvement (Abedi & Abedini, 2017). Marketing professionals develop products or services that resonate with consumers, keeping in mind the crucial role of balancing all the elements of the marketing mix (Marušić, 2019). It becomes important to explore the marketing mix elements from a manager's perspective, as this can provide excellent insight into the interplay between marketing strategies and organizational effectiveness. Enerson et al. (2016) emphasized the necessity of interdependence among marketing elements for successful professional service marketing. In large and complex organizations, effective leadership and centralized control over marketing functions become more critical for enhancing operational efficiency and mitigating any discord. Their research also revealed the relative importance of the marketing mix elements, with the place, physical evidence, and product being prioritized. Moreover, a significant proportion of the respondents viewed promotion and price with skepticism. This reflects a conservative attitude towards certain marketing aspects, highlighting potential gaps in understanding the full scope of marketing strategies. From the manager's perspective, the marketing mix is a flexible tool that can be adjusted frequently to meet changing market needs and dynamics (Al Badi, 2015). Business goals are achieved when the objectives are set, and the market budget is allocated accordingly (Işoraitè, 2016). The importance of each element varies depending on a company's strategy, activities, and competitive landscape (Işoraitè, 2016). On the other hand, the relationship between marketing mix components and patient satisfaction is complex. Calsum et al. (2023) reported that brand image plays a critical mediating role in influencing customer satisfaction, whereas distribution, price, and promotion have no significant effect. This underscores the importance of considering indirect effects and mediating factors when evaluating marketing mix strategies. Furthermore, it is imperative for managers to acknowledge the importance of customer satisfaction as a crucial performance indicator and predictor of future profitability and market performance.



(Prairaite, 2022). While managers generally recognize the significance of the marketing mix in influencing customer satisfaction, their perceptions may not always align with customer reality. Managers' understanding of the effective implementation of the marketing mix is crucial for influencing consumer purchase intentions and decisions. Although all the elements of the marketing mix are important, their relative impacts may vary across industries and target markets. Managers should strive for an integrated approach that considers the interplay between marketing mix elements, brand image, and demographic factors to maximize their impact on consumer behaviour and company performance. As healthcare providers continue to navigate an increasingly competitive landscape, understanding and optimizing these elements will be crucial for attracting and retaining patients, improving service quality, and, ultimately, enhancing overall healthcare delivery. Several studies have examined managers' perspectives on marketing mix implementation and its impact on the hospital segment. While most studies emphasize the significance of all marketing mix elements, one study in Saudi Arabia reported that only five of seven variables (health services, promotion, physical evidence, process, and personal strategies) had a significant effect on patient satisfaction, with pricing and distribution strategies being insignificant (Ahmad et al., 2013). Abedi et al. (2019) reported that the 'product' is the most important factor in attracting patients to private hospitals, and the 'price' is the most important factor in attracting patients to public hospitals. Various studies have concluded that prices and products are two important variables that influence healthcare marketing (Abedi & Abedini, 2017). The hospital has essential medical support, such as that provided in a laboratory. On the continuum of patient care, laboratory services, which provide complex diagnostic information, are essential for most healthcare programs (Church & Naugler, 2020). Few studies have been conducted in the laboratory on the use of a marketing mix to influence patient satisfaction. It is important to investigate the perceptions of marketing managers or decision-makers regarding the implementation of the 7Ps of the marketing mix and their impact on patient satisfaction. Abdillah 2017 reported that the marketing mix has a highly positive and significant effect on customer loyalty in a regional health laboratory. Oktavia et al. (2016) find significant associations between several marketing mix components and customer loyalty. Specifically, product quality, promotion strategies, service processes, and physical evidence were positively correlated with customer loyalty. These elements appear to play crucial roles in fostering repeated patronage and commitment among Prodia's clientele. However, the study also revealed that price, location, and personnel did not exhibit significant relationships with customer loyalty in this context. This research gap presents an opportunity to explore the alignment between managerial perceptions and customer experiences regarding the 7Ps of the marketing mix in healthcare settings. By investigating this potential disconnect, healthcare organizations can refine their marketing strategies to better meet patient needs and expectations. Furthermore, understanding the relationship between marketing mix implementation and patient satisfaction can help healthcare providers optimize their resource allocation and improve overall service quality.

### Hypothesis

- H: Service marketing mix (7Ps) has a significant effect on patient satisfaction in chain diagnostic labs.
- H1: Products have a significant effect on patient satisfaction in chain diagnostic laboratories.
- H2: Price has a significant effect on patient satisfaction in chain diagnostic laboratories.
- H3: Promotion has a significant effect on patient satisfaction in chain diagnostic laboratories.
- H4: Place has a significant effect on patient satisfaction in chain diagnostic laboratories.
- H5: People have a significant effect on patient satisfaction in chain diagnostic laboratories.
- H6: Physical evidence has a significant effect on patient satisfaction in chain diagnostic laboratories
- H7: The process has a significant effect on patient satisfaction in chain diagnostic labs.

### Methods

This study was descriptive, analytical, and cross-sectional. For descriptive analysis, the demographic details of the respondents and employees' perceptions of the 7Ps of marketing were calculated on the basis of the mean and standard deviation. This study used a cross-sectional survey of six top-chain clinical laboratories in India. These are the leading chain labs in India on the basis of their market capitalization on the national stock exchange and other marketing reports (Tandon & Praxis Global Alliance, 2024). These laboratories have corporate offices in Mumbai and Delhi. Primary data collection was performed with a research questionnaire. The components of the marketing mix are laboratory services, pricing, promotion, distribution/access, physical evidence, people, and processes. Laboratory performance was assessed on the basis of patient satisfaction. This survey tool was based on previous studies (Abedi et al., 2019; Abedi & Abedini, 2017; Ahmad et al., 2013; Akroush, 2011; Bahadori et al., 2016; Abdillah, 2017; Mayiya & Haabazoka, 2023). To check the validity of the questionnaire, a pilot study was performed, and a Cronbach's alpha score of .95 was achieved. Two hundred decision makers from six laboratories were purposively selected to respond to the 45 questionnaires. The purposive sampling method better matches the sample to the research objective, leading to trustworthy data and results (Campbell et al., 2020). These decision makers are the sales, marketing, and center managers of chain diagnostic laboratories. Responses were measured on a 5-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). The Zoho survey link was sent via WhatsApp and mail to obtain responses. Filled questionnaires were received from 150 managers. We

used regression analysis as inferential statistics to determine the relationships between the independent and dependent variables. The multiple regression model significantly explains the relationship between independent variables and dependent variables (Ahmad et al., 2013).

## Results

### Descriptive analysis

This section provides an overview of the respondents' characteristics and a clear perspective on the laboratory managers investigated. The overall experience of these managers in the industry is more than ten years. Most were postgraduate students in the science and management streams. The minimum age of the respondents was 32 years, and the maximum age was 54 years. Approximately 40% of the respondents were from the sales team involved in managing the customer front and implementing marketing activities. Thirty percent of the respondents were centre managers, who were primarily involved in the implementation of marketing strategies; the details of their demographic characteristics are mentioned in Table 1.

Table 1 Demographic characteristics of the study participants

		Chain	Percentage
Sample size		150	100%
Work Experience			
	10-15 Years	50	33%
	15-20 Years	60	40%
	>20 Years	40	27%
Qualification			
	Bachelor's degree	23	15%
	Master or PhD	127	85%
Position			
	Marketing managers/Product managers	47	31%
	Sales managers	59	39%
	Centre managers	44	29%

### Regression analysis

It is assumed that the marketing mix elements positively and significantly influence patient satisfaction. Multiple regression analysis is a widely used method for investigating the relationship between one dependent variable and multiple independent variables (Uyanık & Güler, 2013). We applied multiple regression analysis as an inferential tool to test this hypothesis. Table 2 presents the output of the regression analysis of the dependent variable of patient satisfaction, and the independent variable is the 7Ps of marketing.

$$\text{Patient Satisfaction} = -2.844 + (-0.17 \times \text{People}) + (0.212 \times \text{Physical}$$

$$\text{Evidence}) + (0.1171 \times \text{Place}) + (0.2067 \times \text{Price}) + (0.5536 \times \text{Process}) + (0.427 \times \text{Product}) + (0.006307 \times \text{Promotion})$$

Table 2 shows the results of the multivariate regression analysis.

Independent variables	Coefficient	Std. Error	t	P
(Constant)	-2.844			
People	-0.170	0.111	-1.536	0.127
Physical evidence	0.212	0.109	1.946	0.054
Place	0.117	0.102	1.147	0.253
Price	0.207	0.064	3.256	0.001
Process	0.554	0.110	5.028	<0.0001
Product	0.427	0.095	4.516	<0.0001
Promotion	0.006	0.090	0.070	0.944

The value of the intercept is -2.84, which means that if the independent variables have no impact, patient satisfaction will be very low. If the other variables are constant, each coefficient represents the expected change in patient satisfaction with a one-unit change in the respective variable. A positive value indicates a positive relationship between independent and dependable variables, whereas a negative coefficient signifies a negative relationship (Ahmad et al., 2013). In this study, patient satisfaction, as measured by the manager's response, increased by .55 with each unit increase in the process, .43 by each unit change in price, and .21 by each unit change in price. A P value < 0.05 indicates that the relationship between the independent variable and the dependent variable is statistically significant. In this model, the process, product, and price had a significant effect

on patient satisfaction. For physical evidence ( $p = 0.0536$ ), this variable is close to significant, with a positive coefficient of 0.212, indicating that it may influence satisfaction, but it is slightly above the common threshold of 0.05. Place ( $p = 0.2532$ ) and promotion ( $p = 0.9442$ ): Neither place nor promotion significantly affected patient satisfaction.

Interestingly, the coefficient was negative, with a value of -0.17, which means that an increase in the score for "people" (e.g., staff and personnel interactions) was associated with a slight decrease in patient satisfaction. This result is surprising, as we would typically expect "People" to positively influence satisfaction, especially in a service-oriented context such as healthcare. This may be because of a manager's perception mismatch or nonlinear correlation. Managers are likely to overestimate or misinterpret the impact of staff interaction. In chain labs, the ability of doctors to answer patient questions is limited. Although the P value was .127, the relationship between these variables was insignificant. However, further studies are needed to confirm this hypothesis. Place ( $p = 0.2532$ ) and promotion ( $p = 0.9442$ ): Neither place nor promotion significantly affected patient satisfaction.

A higher t value indicates a greater level of impact on the dependent variable. Generally, higher absolute t values (typically above two for many applications) indicate that the coefficient is likely to be significantly different from zero. In contrast, lower t values suggest that it may not be significant. The process has the greatest impact, followed by the product, price, and physical evidence. The R<sup>2</sup> value was .831, which indicates that approximately 83.1% of the variance was accounted for by the model, which is suggestive of the goodness of fit between the model and data. The adjusted R<sup>2</sup> value was high at .822, which accounts for the number of predictors in the model and further justifies the robustness of the model.

**Table 3 shows a model summary (R square).**

Sample size	150
Coefficient of determination R <sup>2</sup>	0.831
R <sup>2</sup> -adjusted	0.822
Multiple correlation coefficient	0.911
Residual standard deviation	2.090

**Table 4 summarizes the hypothesis testing results.**

Hypothesis	Relationship	Results
Product→ Patient satisfaction	<0.0001	Accepted
Price→ Patient satisfaction	0.001	Accepted
Promotion→ Patient satisfaction	0.944	Rejected
Place→ Patient satisfaction	0.253	Rejected
People→ Patient satisfaction	0.127	Rejected
Physical evidence→ Patient satisfaction	0.054	Rejected
Process→ Patient satisfaction	<0.0001	Accepted

## Discussion

Today, the healthcare system is facing competition, and patients are at the center of the system. This has led to a greater emphasis on patient-centered approaches and quality improvement initiatives. Service offerings and delivery are interconnected aspects that impact overall customer satisfaction and the organization's reputation. Laboratory testing is an integral part of the overall healthcare package involved in the clinical decision-making process and provides essential diagnostic services (Chidzaye, 2019). This study aims to understand managers' perspectives on the use of marketing mix elements that influence patient satisfaction in clinical laboratories. The results showed that the service–marketing mix variables significantly influenced patient satisfaction. These findings are unique and represent the manager's view of the influence of the marketing mix on overall patient satisfaction. The results obtained were comparable to those of other studies conducted on similar subjects. Fadhilah and Katmini (2023) concluded that there is a relationship between the marketing mix and customer satisfaction. A similar study by Oktavia et al. (2016) revealed that customer loyalty is influenced by product quality, promotions, processes, and physical evidence rather than by price, location, or staff interactions. In his doctoral dissertation, Su (2019) reported that price significantly influences customer satisfaction. For doctoral dissertations, Zaw 2023 reported that reliability, people, and test availability have a significant influence. There



are few studies available on the effects of various components of the marketing mix on patients in clinical laboratories from the manager's perspective.

We compared our results with those of other studies conducted in the healthcare sector. Customers place more emphasis on the availability of tests and the quality of reports from a product or service point of view. This finding is similar to the results of other studies conducted in laboratory and hospital settings (Ahmad et al., 2013). This suggests that laboratories should focus on enhancing their menus and introducing new tests. The price of chain labs is high and critically influences customer satisfaction. Higher prices negatively influence customer satisfaction. As such, there are no government regulations on the pricing of clinical laboratory services, as in the pharmaceutical industry (Kolte et al., 2021). The availability of discounted healthcare packages and other discount offers positively affects customer satisfaction. Prices are determined primarily on the basis of competition. The place component is access to the services. Surprisingly, the place component does not have a significant correlation with customer satisfaction from the manager's perspective. These findings are similar to those of previous studies (Gonaldy et al., 2023; Gümüş, 2022). This may be because of the home collection services provided by laboratories and multiple open outlets across geography.

The results did not reveal any significant correlations between promotions and satisfaction. This finding corroborates those of other similar studies (Purba et al., 2019). In this study, the person element had no impact on patient satisfaction, but managers felt that there was a need for further training of the customer staff. The highest significant correlation was found for process elements, which correlated with all other major studies conducted in this area (Dawande et al., 2022; Oktavia et al., 2016). All process items, including turnaround time, waiting time, laboratory opening hours, tracking sample reports, and patient confidentiality, positively influence customer satisfaction (AGGARWAL et al., 2022; Widyowati et al., 2023). This finding is important because process elements significantly contribute to service quality and overall customer satisfaction in the service industry.

Additionally, the adoption of digital engagement and lean principles in service delivery has shown promising results (Narolita et al., 2020). Few of our findings are different from those of other studies conducted in the hospital sector. In hospitals, the physical environment and people are important influencing factors (Ravangard et al., 2020; Yaghoubian et al., 2018). In clinical laboratories, customer interaction is limited to the sample collection process only. This may be the reason that physical evidence and people are not important influencing factors in laboratory services.

### **Conclusion**

From a managerial perspective, this study addresses a knowledge gap regarding how different marketing mix components influence patient satisfaction. Process optimization and product availability are two crucial elements that enhance service quality and meet patient expectations. Laboratory management must focus on introducing new tests and improving service delivery processes. Price has emerged as an influential factor, with higher prices negatively affecting patient satisfaction. This can be overcome by bundling tests in the package and providing an adequate discount so that customers perceive it as valuable for money. The result for physical evidence was marginally significant, with a positive coefficient. This finding shows that facility ambience might not be fully impacted but that the reporting format and easy interpretation are significant.

### **Implications of the study**

This study provides an evidence-based understanding of the importance of marketing mix elements for patient satisfaction. More resources need to be allocated for process optimization, digital transformation, technology introduction, staff training, and enhancing accessibility beyond physical locations. The strategic pricing model balances affordability and profitability. Expenditures on traditional promotion models need to be reduced, and greater emphasis must be placed on the quality of reports and service delivery.

### **Limitations**

This study considers managers' views on the impact of the marketing mix. There is a need for similar studies from the patient perspective.

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