

Influence of Cardiologists' Demographic Profile on Overall Satisfaction Towards Marketing Mix Strategies

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ABSTRACT: This study aims to investigate the influence of cardiologists' demographic characteristics on their satisfaction towards marketing mix strategies (MMS) employed by pharmaceutical industries in Bangladesh. Cardiologists (156) were asked to rate the importance of variables of MMS indicating their degree of agreement with satisfaction statement using a 5-point Likert scale. The variables of marketing mix (4Ps) that can be ranked as top 5 out of 14 variables according to their Spearman correlation coefficients are - brand image ($r = 0.532$); selling skill of medical representatives ($r = 0.507$), place of retail pharmacy ($r = 0.484$), promotional policies ($r = 0.476$) and continuous medical education program for doctors ($r = 0.345$). Though the overall mean satisfaction score of females ($M = 4.06$, $SD = 0.87$) is higher than that of male ($M = 3.84$, $SD = 1.02$), the difference is not significant; $p = 0.260$, Cohen's $d = 0.217$ showed the effect is small. Experience above 10 years was labeled as high (41%), otherwise low (59%). Experience had substantial influence on perceived satisfaction towards promotion. Finally, overall satisfaction scores varied based on academic qualification of cardiologists; $p < 0.05$, and Eta-squared = 0.068 implies medium effect. The highest overall satisfaction score was attained for D. Card and others ($M = 4.32$, $SD = 0.82$) and the lowest is for MD ($M = 3.57$, $SD = 10.9$). Cardiologists' satisfaction score towards product (the lowest is for MD and the highest is for D. Card and others); $p < 0.05$; Eta-squared = 0.05 (small effect) and promotion (the lowest is for MBBS and the highest is for D. Card and others) vary significantly according to their academic qualification, $p < 0.05$; Eta-squared = 0.095 implies medium effect.

Key words: Cardiologist, satisfaction, marketing mix strategies, demographic profile, effect size, cohen's d, eta squared, t-tests.

INTRODUCTION

Customers are primarily of two types- those who buy for their own consumption and those who buy for the consumption of someone else. Marketers usually position their messages to target either of the aforementioned types of customers. Given the unique role of the physician as a customer, the marketing strategies used by the pharmaceutical industry radically differ from that of other industries. The physician here is the decision maker who diagnoses the patient and accordingly, identifies the product category and selects a specific brand among a vast

array of alternatives in the market. But even though the physician is the agent who makes the decision on the patient's behalf, in the end, it is the patient who has to use the selected product and takes responsibility of paying for it.¹

Physicians have thus, due to their role as intermediaries and key decision makers, have become the chief targets of the marketing activities of pharmaceutical companies. The very metric against which pharmaceutical companies' measure their marketing success is by the volumes of medicines sold as a consequence of the frequency of prescriptions written down by physicians prescribing their products. Prescriptions in actuality indicate the recognition of a physician that the said product is the

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best alternative to treat the patient or is at least a good alternative, worthy of a closer appraisal. Marketing has a clear effect on the prescribing practice of physicians.² It is not easy to evaluate the extent to which the interaction between doctors and medical representatives will benefit the interests of the patients. However, notifying physicians about the clinical efficacy data, interactions and safety data and cost effectiveness data of their available pharmaceutical products is very important.³ These fall under the legitimate marketing factors of pharmaceutical companies. Thus, it is necessary for doctors to get access to these clinical data which will help them undertake better therapeutic decisions.

Physicians and pharmaceutical industries have convergent interests when it comes to providing safe and effective medication to patients even though they differ in their practices. Interactions between them are therefore, almost unavoidable, but at times, can lead to conflicts of interests.⁴ The application of irrational and unethical factors pertaining to patient care should be avoided by pharmaceutical marketing. These unethical factors include incentives like gifts, biased information and activities of motivation or maintaining relationship with physicians.^{5,6} Gifts (promotional incentives) have been the topic of extensive controversy and research.⁷ Occasional guidelines or policy actions have been formulated against it as a preventive measure. There is an overwhelming consensus among researchers that gifts do indeed have a clear effect on physicians' decision-making process even when they do not believe it to be so and even when the said gifts are of negligible value.⁸ Patients have a negative perception of gifts to doctors. If necessary, free samples of legally available drugs may be provided on request to prescribers, in modest quantities.⁹

Marketing professionals (sellers or marketers), develop marketing strategies and techniques to achieve the targeted market share through the implementation of a set of action plans.¹⁰ The product managers of strategic business unit lead the marketing professionals (medical affairs manager, product managers and sales manager) to work

together to achieve the goals of therapeutic unit.^{11,12} Marketing strategy combines all of its marketing goals into one comprehensive plan. It should be drawn from market research and focus on the right product mix of marketing mix strategies in order to achieve the maximum profit potential for sustaining the business.^{13,14} Winning companies can meet customers' needs economically, conveniently and with effective communication. In the present research, cardiologic pharmaceutical market segment was selected as a model for the evaluation of the impact of MMS on cardiologists' satisfaction.

It is noteworthy to mention that, impact of MMS on doctors' satisfaction according to their demographic profiles for competitive advantages have not significantly been found to be documented and made available for the pharmaceutical industry in Bangladesh which is vital for creating more opportunities in Bangladesh pharmaceutical market.¹⁵ There are many factors other than scientific knowledge that affect the prescribing trends. Doctors' level of education, doctors' gender, doctors' demographic characteristics, patients' profile, the behavior of the peer physicians, patients' request on medication, number of patients examined per day are some of those factors.¹⁶ Assessment of prescription patterns based on World Health Organization prescribing indicators helps to improve the quality of prescription.¹⁷ Physicians' preferences in drug prescription are influenced by the quality of medicines, company reputation, communication relationship with the company, availability of medicines and price.^{18,19}

The effect of doctors' academic qualifications on prescription has been observed in the present research. Moreover, there are no studies concerning the relationship of cardiologists' prescribing satisfaction with factors like gender, age, academic degrees and experience of practice in Dhaka city. In the present study, researchers carried out surveys on cardiologists' prescribing satisfaction towards 4Ps marketing strategies.

The most important and popular research topic is customer satisfaction which has received wide spread attention.²⁰ The importance of customer satisfaction

in marketing strategies is a prominent issue which cannot be overlooked. Customer satisfaction is one of the customer retention strategies which need to follow by the companies.²¹ In this era of global competition, it is evident that all pharmaceutical companies are facing fierce competition. To gain competitive advantage over competitors' pharmaceutical companies can use physician's satisfaction as a vital tool.²²

Customer satisfaction can be explained as an evaluative outcome of perceived value of a customer's consumption experience.²³ In the model customer satisfaction, they classify attributes based on customer perception and its relation with the given extent of satisfaction.²⁴ Customer satisfaction is described as the overall evaluation of local medicines by the physicians' experience of consumption by patients through prescription for a prolonged period of time.²⁵ Therefore, satisfaction is defined as the overall assessment of every aspect of a medicinal product in the field of pharmaceutical industry. Direct customers of pharmaceutical companies are physicians' who primarily interact with medical representatives.²⁶ It is not an exaggeration to imply that physicians are extremely powerful who have the legal authority to control access of the medicine to the patients. Customers' satisfaction is a significant criterion for doctors' loyalty towards pharmaceutical companies. It is necessary to comprehend the needs and behavior of physicians and companies. Perceived value leads to physicians' satisfaction and there is a correlation between the two variables. Perceived value represents the higher and more abstract level of evaluation of satisfaction regarding the quality of medicinal products.²⁷ This particular concept facilitates the development of marketing techniques that builds the image of a company which ultimately leads to a better market share and sales growth.²⁸ Product quality is the antecedent of customer satisfaction. Positive value is received by physicians that reflect their satisfaction whereas negative value represents their dissatisfaction.²⁹

In modern marketing theory, one of the most basic concepts that have attracted important attention

from the academy and the business industry is marketing mix strategy.³⁰ Customers, competitors and companies are the three factors that are required to define marketing strategy.³¹ Marketing mix is defined by 4Ps which are product, price, place and promotion. These are used by an organization to fulfill the requirements of its target customers. The elements of 4Ps are so important that the absence of any one may lead to the failure of the business.³² The objectives of marketing mix strategies are to offer more values to the customers to develop a long-term relationship.³³ Marketing mix can be considered as tools or techniques as well as strategies which are employed by pharmaceutical companies to satisfy the requirements of physicians, pharmacists and patients.³⁴

MATERIALS AND METHODS

Deductive research approach is used in the present study where the variables of marketing mix strategies (MMS) were taken from established theories and literatures. The variables of these established theories have been tested and accepted as significant variables in previous research work in developed and developing countries.

Extensive literature review on marketing strategies and tactics in developed and developing countries as well as secondary data of market analysis have helped to find out the research gap in the Bangladeshi pharmaceutical market. Therefore, the information needed in this study includes identification of the relationship between variables of MMS and overall satisfaction of doctors and demographic profiles.

For the present study, doctors (cardiologists) are the sample elements of cardiac market segment and possess the required information. Sampling frame consists of a list of direction for identifying the target population. A list of total number of cardiologists was collected from Bangladesh Cardiologists Association (BCA) to find out the addresses of hospitals and telephone numbers. Target population of all cardiologists in Dhaka city was approximately 750 in 2019 and sample size determined for the

research was 156 at 95% confidence level with 7% margin of error.³⁵

The objective of descriptive research design is to test specific hypotheses of the present study and examine the relationship of variables of MMS and cardiologists' satisfaction depending on their gender, age, academic qualification and experience. In the descriptive study, well-structured questionnaires were developed out of an extensive literature review^{9,11,13,14} and survey method was used for data collection.

Variable and instruments. The questionnaires contained the demographic information of the cardiologists including gender, age, academic qualification, years of experience dealing with cardiac medicines. Cardiologists' satisfaction towards marketing mix (4Ps) and marketing strategies were measured by 14 items under 4 constructs. The 14 items and overall satisfaction were measured in 5-point Likert scale (1=strongly disagree to 5=strongly agree). First construct was *product* which consists efficacy, brand, safety, company reputation and new cardiac medicine. Second construct was price of medicine with competitors' pricing; third was place with availability, place of drug store, facilities of model pharmacy and the last one was promotion including selling skill of medical representatives, continuous medical education program, awareness campaign, promotional policies. Mean score of each construct was computed simply by averaging their items.

Statistical analysis. To evaluate the relationship between overall satisfaction and fourteen 4P marketing strategies, Spearman rank correlation was used (as the variables are measured in 5-point Likert scale). To evaluate how cardiologists' extent of agreement towards satisfaction differ from neutral level (3); t-test was applied. Two-sample t-test was applied to investigate significant difference in satisfaction scores across gender and experience level of the cardiologists. Effect of age class and academic qualification were assessed by one-way ANOVA (F-test) technique. Cohen's d was used to evaluate the effect size for t-test and Eta-squared was used to

evaluate effect size for F-test.³⁶ If estimated Cohen's d is less or equal 0.2, 0.5, 0.8 then the effect sizes are labeled as small, medium and large. Eta-squared ranges from 0.01-0.06, above 0.06-0.14 and above 0.14 referred as small, medium and large effect respectively.³⁷ Data were analyzed by using IBM SPSS Statistics version 25 software.

Hypothesis development. The authors asked the following research questions: does the overall satisfaction of cardiologists relate to 4P marketing strategies of pharmaceutical companies? In what extent the satisfaction of cardiologists towards marketing strategies differs? Is satisfaction level of cardiologists towards marketing strategies affected by their demographic features?

To answer these questions, following hypotheses were formulated:

- H1: Overall satisfaction of cardiologists is associated with 4P marketing strategies of pharmaceutical companies.
- H2: Cardiologists' overall satisfaction and satisfactions towards 4Ps differ from neutrality.
- H3: Gender of cardiologists affects their satisfaction about 4P marketing strategies.
- H4: Age of cardiologists affects their satisfaction about 4P marketing strategies.
- H5: Experience of cardiologists affects their satisfaction about 4P marketing strategies.
- H6: Academic qualification of cardiologists affects their satisfaction about 4P marketing strategies.

RESULTS AND DISCUSSION

Out of 156 cardiologists, the majority of the participants (77.6%) were male. Age of the cardiologists ranged from 25 years to 72 years; majority (44.9%) of them were from 30 to 40 years' age class. The highest experience of cardiologists was found 48 years. Experience above 10 years was labeled as "high (41%)" otherwise "low (59%)". Most of the cardiologists (38.5%) had MBBS degree. Survey results (Table 1) show the extent of satisfaction of cardiologists towards 4P strategies and overall satisfaction. The majority of the cardiologists

| a) Demographic information | | | | | | |
|---|---|---------|-----------------|----------------------------|---|---|
| 1. Gender: | | 2. Age: | | 3. Academic qualification: | | |
| 4. Years of experience dealing with cardiac medicines: | | | 5. Designation: | | | |
| b) Scale based information: Please put tick (√) marks against each statement to evaluate the impact of Marketing Mix Strategies of Bangladeshi pharmaceutical companies on your satisfaction to prescribe the cardiac medicines. | | | | | | |
| [1. Strongly disagree, 2. Disagree, 3. Neutral, 4. Agree, 5. Strongly agree] | | | | | | |
| SL. | Statements | 1 | 2 | 3 | 4 | 5 |
| 1. | Efficacy of cardiac medicine is an important factor for your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 2. | Brand image matters for selection of cardiac medicines on your prescription. | 1 | 2 | 3 | 4 | 5 |
| 3. | Safety information about cardiac medicines supplied by the company is a key factor for your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 4. | Company reputation impacts your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 5. | New cardiac medicines are more acceptable than older ones. | 1 | 2 | 3 | 4 | 5 |
| 6. | Pricing is reflected in quality of cardiac medicines. | 1 | 2 | 3 | 4 | 5 |
| 7. | Competitors' pricing of cardiac medicines have an effect on your prescription. | 1 | 2 | 3 | 4 | 5 |
| 8. | Availability of cardiac medicines by company's distributors is important for your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 9. | Location of retail pharmacy store is an imperative factor for your satisfaction to prescribe. | 1 | 2 | 3 | 4 | 5 |
| 10. | Facilities of model pharmacy effect on your prescribing decision. | 1 | 2 | 3 | 4 | 5 |
| 11. | Selling skill of medical representatives impacts on your satisfaction to prescribe. | 1 | 2 | 3 | 4 | 5 |
| 12. | Continuous medical education program like seminar/conference about cardiac medicines is important factor for your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 13. | Awareness campaign to prevent cardiac disease by the company is an imperative factor for your satisfaction. | 1 | 2 | 3 | 4 | 5 |
| 14. | Promotional policies of companies impact your prescription of cardiac medicines. | 1 | 2 | 3 | 4 | 5 |
| 15. | Overall perception about product, price, place and promotional strategies for cardiac medicine is highly satisfactory. | 1 | 2 | 3 | 4 | 5 |

Figure 1. Image of five point Likert scale questionnaire for cardiologist used in the survey.

strongly agreed towards efficacy (65.4%), brand (35.9%), safety (38.5%), selling skill of medical representatives (31.4%) and continuous medical education program (49.4%) had significant impact on

their satisfaction. About company reputation 44.9% cardiologists were just agreed. It is observed that 32.7% cardiologists' satisfaction was neutral for new cardiac medicines and 31.4% for promotional

policies. Most of the cardiologists expressed satisfaction about price (42.3%), competitors' pricing (51.3%), availability (43.6%), place (40.4%), facilities of model pharmacy (48.7%) and awareness

campaign (44.9%). However, about one-third of the cardiologists agreed that they are satisfied towards whole 4P strategies (33.3%).

Table 1. Cardiologists' extent of satisfaction towards 4P strategies and overall satisfaction.

| Parameter | 1 | 2 | 3 | 4 | 5 |
|--|---------|-----------|-----------|-----------|------------|
| Efficacy | 1(0.6%) | 0(0.0%) | 10(6.4%) | 43(27.6%) | 102(65.4%) |
| Brand | 8(5.1%) | 6(3.8%) | 34(21.8%) | 52(33.3%) | 56(35.9%) |
| Safety | 2(1.3%) | 1(0.6%) | 33(21.2%) | 60(38.5%) | 60(38.5%) |
| Company reputation | 2(1.3%) | 14(9.0%) | 25(16.0%) | 70(44.9%) | 45(28.8%) |
| New cardiac medicines | 8(5.1%) | 26(16.7%) | 51(32.7%) | 43(27.6%) | 28(17.9%) |
| Price | 1(0.6%) | 21(13.5%) | 44(28.2%) | 66(42.3%) | 24(15.4%) |
| Competitors' pricing | 3(1.9%) | 15(9.6%) | 35(22.4%) | 80(51.3%) | 23(14.7%) |
| Availability | 4(2.6%) | 6(3.8%) | 23(14.7%) | 68(43.6%) | 55(35.3%) |
| Place | 3(1.9%) | 6(3.8%) | 56(35.9%) | 63(40.4%) | 28(17.9%) |
| Facilities of model pharmacy | 1(0.6%) | 8(5.1%) | 17(10.9%) | 76(48.7%) | 54(34.6%) |
| Selling skill of medical representatives | 9(5.8%) | 14(9.0%) | 41(26.3%) | 43(27.6%) | 49(31.4%) |
| Continuous medical education program | 1(0.6%) | 5(3.2%) | 19(12.2%) | 54(34.6%) | 77(49.4%) |
| Awareness campaign | 2(1.3%) | 11(7.1%) | 23(14.7%) | 70(44.9%) | 50(32.1%) |
| Promotional policies | 4(2.6%) | 25(16.0%) | 49(31.4%) | 34(21.8%) | 44(28.2%) |
| Overall satisfaction | 2(1.3%) | 11(7.1%) | 40(25.6%) | 52(33.3%) | 51(32.7%) |

1 = (strongly disagree), 2 = (disagree), 3 = (neutral), 4 = (agree), 5 = (strongly agree)

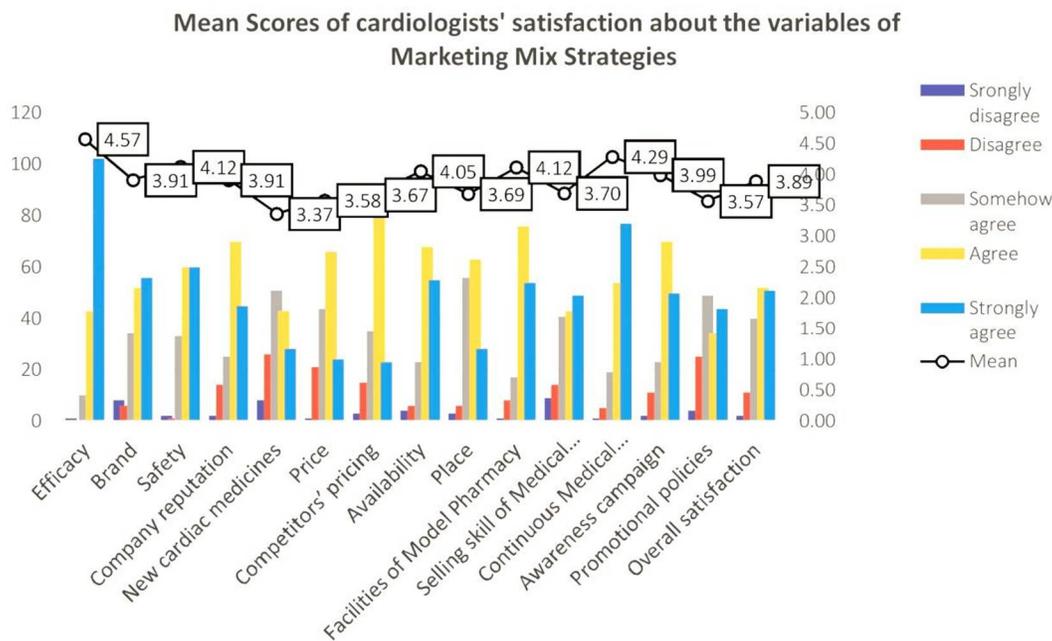


Figure 2. Mean scores of cardiologists' satisfaction about the variables of marketing mix strategies.

Results (Table 2) reveal that except efficacy other thirteen marketing strategies were significantly

correlated with overall satisfaction (p-value < 0.05). So, there exists a remarkable relationship between

marketing strategies deployed by the pharmaceutical companies and cardiologists' satisfaction. Hence, the first hypothesis (overall satisfaction of cardiologists

is associated with 4P marketing strategies of pharmaceutical companies) was accepted.

Table 2. Relationship of fourteen 4P strategies with satisfaction of cardiologists.

| 4Ps strategies | Overall satisfaction of cardiologists towards 4Ps strategies | |
|--|--|---------|
| | Spearman correlation coefficient | p value |
| Efficacy | 0.127 | 0.115 |
| Brand | 0.532 | 0.000 |
| Safety | 0.288 | 0.000 |
| Company reputation | 0.267 | 0.001 |
| New cardiac medicines | 0.326 | 0.000 |
| Price | 0.334 | 0.000 |
| Competitors' pricing | 0.321 | 0.000 |
| Availability | 0.250 | 0.002 |
| Place | 0.484 | 0.000 |
| Facilities of model pharmacy | 0.185 | 0.021 |
| Selling skill of medical representatives | 0.507 | 0.000 |
| Continuous medical education program | 0.345 | 0.000 |
| Awareness campaign | 0.309 | 0.000 |
| Promotional policies | 0.476 | 0.000 |

Table 3. Extent of agreement of satisfaction of cardiologist towards 4P strategies.

| | N | Mean | SD | t-value | p value | Cohen's <i>d</i> |
|----------------------|-----|------|------|---------|---------|------------------|
| Product | 156 | 3.98 | 0.57 | 21.26 | 0.000 | 1.70 |
| Price | 156 | 3.63 | 0.75 | 10.48 | 0.000 | 0.84 |
| Place | 156 | 3.95 | 0.64 | 18.49 | 0.000 | 1.48 |
| Promotion | 156 | 3.89 | 0.72 | 15.35 | 0.000 | 1.23 |
| Overall satisfaction | 156 | 3.89 | 0.99 | 11.27 | 0.000 | 0.90 |

The variables of marketing mix (4Ps) that can be ranked top 5 out of 14 variables according to their Spearman correlation coefficients are brand image ($r= 0.532$); selling skill of medical representatives ($r = 0.507$), place of retail pharmacy ($r = 0.484$), promotional policies ($r = 0.476$) and continuous medical education program for doctors ($r = 0.345$). These findings can be used by the marketing managers to develop their marketing strategies to achieve their sales goals cost-effective ways.

From table 1, it is noted that, cardiologists' extent of agreement about satisfaction was positive. To evaluate how their agreement about satisfaction towards 4P (product, price, place and promotion)

mean scores are shown in table 3. This result shows that the mean scores of 4P strategies are above 3; and is the highest for product ($M = 3.98$, $SD = 0.57$) and lowest for price ($M = 3.63$, $SD = 0.75$). All mean scores including overall satisfaction are significantly higher than neutral value 3 ($p < 0.05$). However, reported Cohen's *d* of the tests was found at least 0.80; implies large effect. This reflects that the satisfaction level towards 4P is significantly higher than neutral value. Hence the second hypothesis is accepted.

Average satisfaction scores of 4P strategies were compared according to demographic features of the cardiologists. Table 4 shows that, irrespective of

demographic characteristics, all mean scores are above 3.00. Result shown in table 5 implies that, though the overall mean satisfaction score of females ($M = 4.06$, $SD = 0.87$) is higher than that of male ($M = 3.84$, $SD = 1.02$); but the difference is not significant; $p = 0.260$, Cohen's $d = 0.217$ showed the effect is small. Similarly, mean satisfaction scores for product, price, place and promotion are also not significantly differing between male and female cardiologists > 0.05 ; and consequently, effect sizes are small for product and promotion; negligible for price and place. Satisfaction scores also do not vary significantly between low and high experienced cardiologists for overall satisfaction, product, price and place; but marginally differs for promotion, $p \leq 0.05$; and small effect size is found for place (Cohen's $d = 0.255$) & promotion (Cohen's $d = 0.321$) and negligible for others (Cohen's $d < 0.2$). Age category is found as significant factor which affects satisfaction scores of promotions, $p < 0.05$, and Eta-squared = 0.07 implies medium effect. Product, price, place and overall satisfaction of cardiologists did not differ by their age category ($p > 0.05$) and effect sizes are small. Finally, overall satisfaction scores are largely varied on academic qualification of cardiologists, $p < 0.05$, and Eta-

squared = 0.068 implies medium effect. The highest overall satisfaction score is attained for D. Card and others ($M = 4.32$, $SD = 0.82$) and the lowest is for MD ($M = 3.57$, $SD = 10.9$). Cardiologist satisfaction score towards product (the lowest is for MD and the highest is for D. Card and others); $p < 0.05$; Eta-squared = 0.05 (small effect) and promotion (the lowest is for MBBS and the highest is for D. Card and others) vary significantly according to their academic qualification, $p < 0.05$; Eta-squared = 0.095 implies medium effect. So, the third hypothesis is partially accepted.

Contribution of the research. This empirical study on the impact of marketing mix strategies on cardiologists' satisfaction is the first initiative so far known to researchers in context of Bangladeshi.

On the other hand, this research has given more credible evidence in the analysis of the relationship between the independent variables of marketing mix strategies on the satisfaction of the cardiologists according to demographic profiles in the pharmaceutical cardiac market. This research may inspire further study of other therapeutic segments of the pharmaceutical market.

Table 4. Descriptive statistics for 4P strategies and overall satisfaction across demographic features of cardiologists.

| | | Overall satisfaction mean (SD) | Product mean (SD) | Price mean (SD) | Place mean (SD) | Promotion mean (SD) |
|---------------------------|--------------------|-----------------------------------|----------------------|--------------------|--------------------|------------------------|
| Gender | Male | 3.84(1.02) | 3.94(0.54) | 3.60(0.77) | 3.96(0.65) | 3.93(0.71) |
| | Female | 4.06(0.87) | 4.10(0.66) | 3.73(0.67) | 3.92(0.61) | 3.74(0.75) |
| Experience | Low | 3.92(0.89) | 3.94(0.61) | 3.59(0.77) | 3.88(0.6) | 3.79(0.73) |
| | High | 3.84(1.12) | 4.02(0.52) | 3.69(0.73) | 4.05(0.69) | 4.02(0.69) |
| Age class | Below 30 | 4.17(0.72) | 4.1(0.69) | 3.54(0.69) | 3.75(0.75) | 3.25(0.82) |
| | 30 to 40 | 3.91(0.86) | 3.93(0.58) | 3.69(0.73) | 3.88(0.7) | 3.93(0.67) |
| | 41 to 50 | 3.79(1.14) | 4(0.54) | 3.57(0.82) | 4.07(0.54) | 3.92(0.72) |
| | Above 50 | 3.94(1.12) | 4.01(0.64) | 3.66(0.63) | 3.98(0.6) | 4.08(0.71) |
| Academic qualification | MBBS | 3.87(0.89) | 4.00(0.59) | 3.57(0.63) | 3.96(0.57) | 3.70(0.69) |
| | FCPS (cardiology) | 4.04(1.04) | 3.98(0.63) | 3.56(0.78) | 3.76(0.85) | 3.84(0.85) |
| | MD | 3.57(1.09) | 3.80(0.53) | 3.55(0.87) | 3.94(0.66) | 3.89(0.78) |
| | D. Card and others | 4.32(0.82) | 4.19(0.47) | 3.95(0.69) | 4.11(0.54) | 4.33(0.3) |

Table 5. Effect of demographic characteristics of cardiologist towards 4P strategies and overall satisfaction.

| | 4P strategies | t-value | p value | Cohen's <i>d</i> |
|------------------------|----------------------|---------|---------|------------------|
| Gender | Overall satisfaction | -1.131 | 0.260 | 0.217 |
| | Product | -1.429 | 0.155 | 0.274 |
| | Price | -0.900 | 0.370 | 0.173 |
| | Place | 0.282 | 0.778 | -0.054 |
| | Promotion | 1.419 | 0.158 | -0.272 |
| Experience | Overall satisfaction | 0.498 | 0.620 | -0.081 |
| | Product | -0.840 | 0.402 | 0.137 |
| | Price | -0.824 | 0.411 | 0.134 |
| | Place | -1.564 | 0.120 | 0.255 |
| | Promotion | -1.974 | 0.050 | 0.321 |
| Age | | F-value | P value | Eta-squared |
| | Overall satisfaction | 0.522 | 0.668 | 0.010 |
| | Product | 0.418 | 0.741 | 0.008 |
| | Price | 0.315 | 0.814 | 0.006 |
| | Place | 1.340 | 0.264 | 0.026 |
| Academic qualification | | | | |
| | Overall satisfaction | 3.726 | 0.013 | 0.068 |
| | Product | 2.684 | 0.049 | 0.050 |
| | Price | 2.105 | 0.102 | 0.040 |
| | Place | 1.246 | 0.295 | 0.024 |
| | Promotion | 5.288 | 0.002 | 0.095 |

Low =Less or equal to 10); high= (Above 10)

This study has tried to focus on the important attributes of marketing mix strategies that impact on the satisfaction of cardiologists and vary from gender, age, experience and academic qualification. The strategy makers of pharmaceutical companies can revise their policies and take into consideration the benefit of end-users. The companies need to revise their perspective from the point of view of cardiologists. Patients will be benefitted through better prescription pattern and reduced treatment cost burden. These findings may contribute to the literatures of pharmaceutical marketing research in Bangladesh and development of marketing strategies and techniques for the pharmaceutical companies.

Limitations of the study.

- Only cardiac segment of pharmaceutical market in Bangladesh has been selected to evaluate the impact of MMS using exploratory factor analysis due to constraint of resources.

- Only cardiologists have been selected as respondents.
- Only Dhaka based hospitals were considered highlighting its geographical limitations.
- The respondents did not want to disclose all information due to confidentiality.
- Results of the cardiac market cannot be generalized to other segments of industries like food, agriculture etc.

CONCLUSIONS

The topic of the study is to evaluate the impact of demographic profiles on cardiologists' satisfaction. This study can be helpful in determining the marketing mix variables that are most effective in achieving doctors' satisfaction. Thus, end consumers (patients) will be benefitted through better prescription pattern and reduced treatment cost burden. However, sufficient work has not been conducted in this context in Bangladesh although this

type of research work is very common in the west and other developed nations. Gradually, Bangladesh has achieved a competitive and respectable position for producing and marketing different therapeutic groups of medicines home and abroad. It can be concluded that cardiologists' prescribing satisfaction is positively affected by the fourteen variables of marketing mix strategies. Pharmaceutical marketers of Bangladesh have to understand the extent of satisfaction level from doctors' point of view to design better marketing strategies to resolve the medicinal, economical, convenience and communication issues. The effect of cardiologists' demographic profiles such as gender, age, experience and academic qualifications was found significantly different on overall satisfaction towards marketing mix strategies. This research may inspire further study of other therapeutic segments of the pharmaceutical market.

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Ethics approval and consent to participate

University of Dhaka, Department of Marketing issued a letter to the cardiologists for participating the survey (National Institute of Cardiovascular disease hospital, Dhaka Medical hospital, Ibrahim Cardiac Hospital). Ethical Clearance Committee of Dhaka University approved the survey questionnaire for the research.

Competing interests

Authors declared no competing interest.

REFERENCES

- Gonul, F.F., Carter, F., Petrova, E. and Srinivasan, K. 2001. Promotion of prescription drugs and its impact on physicians' choice behavior, *J. Mark.* **65**, 79-90.
- Kerridge, I. 2008. Comment: interactions between the medical profession and the pharmaceutical industry in Australia, *Australas. Psychiatry* **16**, 166-168.
- Biswas, K. and Ferdousy, U.K. 2016. Influence of pharmaceutical marketing on prescription behavior of physicians: a cross-sectional study in Bangladesh. *J. Account. Mark.* **5**, 1-4.
- Richard, O.A. and Agyeman, A.A. 2016. Irrational use of medicines-a summary of key concept. *Pharmacy* **4**, 35.
- Jibson, M.D. 2007. Interactions between physicians and industry: a guide for clinicians. *J. Life Long Learn. Psychiatry* **5**, 398-406.
- Wazana, A. 2000. Physicians and pharmaceutical industry: is a gift ever just a gift? *JAMA*. **283**, 373-380.
- Batchlor, E. and Laouri, M. 2003. Pharmaceutical promotion. *Advertising and Consumers Health Affairs*. **22**, 109-111.
- Katz, D., Caplan, A.L. and Merz, J.F. 2003. All gifts large and small: toward an understanding of the ethics of pharmaceutical industry gift-giving. *Am. J. Bioeth.* **3**, 39-46.
- Lurk, J.T., DeJong, D.J., Woods, T.M., Knell, M.E. and Carroll, C.A. 2004. Effects of changes in patient cost sharing and drug sample policies on prescription drug costs and utilization in a safety-net-provider setting. *Am. J. Health Syst. Pharm.* **61**, 267-272.
- Bee, A.H. 2009. Market share strategies in pharmaceutical industry. *Unitare J.* **5**, 50- 60.
- Al-Areefi, M.A, Hassali, M.A, Izham, M. and Ibrahim, M. 2013. Physicians' perceptions of medical representative visits in yemen: a qualitative study. *BMC Health Serv. Res.* **13**, 331.
- Dogramatzis, D. 2002. Overview of Pharmaceutical Distribution, A Practical Guide.
- Barber, N., Bradley, C., Barry, C., Stevenson, F., Britten, N. and Jenkins, L. 2005. Measuring the appropriateness of prescribing in primary care: are current measures complete? *J. Clin. Pharm. Ther.* **30**, 533-539.
- Lenjisa, J.L. and Fereja, T.H. 2013. A retrospective analysis of prescribing practice based on WHO prescribing indicators at four selected hospitals of West Ethiopia: policy implication. *East Cent. African J. Pharma. Sci.* **16**, 69-74.
- Elahi, F., Ahmed, S., Haque, M. and Chowdhury, N. 2016. An empirical investigation into physician preferences in drug prescription: an integrated methodology of AHP and QFD. *Inter. J. Marke. Stud.* **8**, 81-89.
- Khazzaka, M. 2019. Pharmaceutical marketing strategies' influence on physicians' prescribing pattern in Lebanon: ethics, gifts and samples. *BMC Health Serv. Res.* **19**, 1-11.
- Gill, P.S., Dowell, A. and Harris, C.M. 1997. Effect of doctors' ethnicity and country of qualification on prescribing patterns in single-handed general practices: linkage of information collected by questionnaire and from routine data. *Br. Med. J.* **315**, 1590-1594.
- World Health Organization .1986. Ethical criteria for medical drug promotion, EB93/19, 50-60.
- Guo, L., Xiao, J.J. and Tang, C. 2009. Understanding the psychological process underlying customer satisfaction and retention in a relational service. *J. Busi. Res.* **62**, 1152-1159.

20. Raza, M.A, Siddiquei, A.N, Awan, H.M. and Bukhari, K. 2012. Relationship between service quality, perceived value, satisfaction and revisit intention in hotel industry. *Inter. J. Contemp. Res. Bus.* **4**, 788-805.
21. Cadotte, E.R., Robert, B.W. and Jenkins, R.L. 2012. Expectations and norms in models of consumer satisfaction. *J. Mark. Res.* **24**, 305-14.
22. Kano, N., Seraku, N., Takahashi, F. and Tsuji, S. 1984. Attractive quality and must-be quality. *J. Japan. Soc. QC*, **14**, 147-156.
23. Fornell, C., Johnson, M.D., Anderson, E.W., Cha, J. and Bryant, B.E. 1996. The American customer satisfaction index: nature, purpose and findings. *J. Mark.* **60**, 7-18.
24. Kalaskar, P.B. and Sager, P.N. 2012. Factors influencing prescription behavior of physicians: a study with reference to Marathwada Region. *Ind. Stre. Res. J.* **2**, 1-4.
25. Woods, D.J. 1996. Extemporaneous formulations –problems and solutions. *Paed. Perin. Dr. Thera.* **1**, 25-29.
26. Tsiotsou, R. 2005. Perceived quality levels and their relation to involvement, satisfaction and purchase intentions. *Mark. Bull.* **16**, 1-10.
27. Cronin, J.J., Brady, M.K. and Hult, G.T.M 2000. Assessing the effects of quality, value and customer satisfaction on consumer behavioral intentions in service environments. *J. Retailing* **76**, 193-218.
28. Haque, M. and Islam, R. 2013. Effects of supply chain management practices on customer satisfaction: evidence from pharmaceutical industry of Bangladesh. *Global Busi. Manag. Res.* **5**, 120-136.
29. Kotler, P. and Armstrong, G. 2014. Principles of Marketing. 13th Edition. *New Jersey. Prentice Hall.*
30. Ohmae, K. 1982. The mind of the strategist. *McGraw-Hill*, New York.
31. McCarthy, E.J. 1978. "Basic marketing: A managerial approach", 6th Edition, Homewood, Irwin.
32. Kotler, P. and Keller, K.L. Marketing Management 2009. 13th Edition, *Pearson Prentice Hall*, Upper Saddle River.
33. Saad, S., Rizwan, A., Nawaz, A., Imamuddin, K. and Vishnu P., 2014. Factors influencing prescription behavior of physicians. *The Pharma. Innov. J.* **3**, 30-35.
34. Purcarea, I. and Ratiu, P.M. 2009. Exploring the pharmaceutical marketing-mix facing the challenge of Business Intelligence in the 21st century. *Pharmacia* **57**, 366-388.
35. Daren, S.S., Josh, T., Daniel, S.Y. and David, S.M. 2015. The Practice of Statistics. New York: W.H. Freeman.
36. Cohen, J. 1988. Statistical power analysis for the behavioral sciences. 2nd Edition, Hillsdale, N.J. Erlbaum.
37. Martin, W.E. and Bridgmon, K.D. 2012. Quantitative and Statistical Research Methods: From Hypothesis to Results. **42**, John Wiley and Sons, Hoboken, N. J.