

## **Influence of Marketing Mix in Prescribing Pharmaceutical Products by Ophthalmologists in Sri Lanka**

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**ABSTRACT.** *The Sri Lankan pharmaceutical retail market is valued at 14 billion, and the drug regulatory guidelines restrict the pharmaceutical marketer only to choose personal selling out of the available communication mix. Aim of this study was to investigate the influence of marketing mix elements on the decision making of doctors in prescribing pharmaceutical products. The population of 63 ophthalmologists in Sri Lanka was selected and data were collected using a questionnaire survey. Data were analyzed using Kruskal Wallis test. Findings revealed “price” as the most important element of the marketing mix followed by “place” and “product” as the second and third most important elements respectively. The price commensurate with quality, income of patients, price per unit, cost born by a given patient per day and cost per treatment were found to be equally important. The availability at the chemist was revealed as the most critical place sub-element and efficacy and quality of the product were the most critical product related sub- elements. Published clinical studies were rated as the most critical sub-element among the promotion related elements.*

### **INTRODUCTION**

Sri Lankan Pharmaceutical retail market is represented by 295 registered companies and valued at Rs 14 billion with a growth rate of about 15% per annum (IMS Q3 2007). As per the regulations imposed by the Drug Regulatory Authority, the industry can only use personal selling to influence doctors for prescribing products. This is carried out through medical representatives, which requires substantial investments. Globally US\$ 12 billion is spent on drug promotional activities in the form of detailing by pharmaceutical representatives, printed materials in journals and free drug samples. Locally Rs 0.8 – 1.0 million is spent on each medical representative per year. Most of the available research has focused on investigating one or few elements and their influence on the prescription of pharmaceutical products by doctors. This research aims to study the marketing mix elements and their influences on prescription of pharmaceutical products by doctors in the Sri Lankan pharmaceutical market.

Robbins *et al.* (2004) argue that there are three critical areas which influence the decision making of an individual. The first is related to the factors in the situation, which includes

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the time, work setting and social setting. Second is related to the factors related to the perceiver which includes the attitude, motives, interests, experience and the expectations. The third are the factors in the target which include the marketing mix elements that are under the control of the pharmaceutical marketer, which is considered as the scope of this study.

### **Promotional influences**

Drug promotion includes all informational and persuasive activities carried out by manufactures with the aim of increasing the usage of a product (Chew *et al*, 2000). Pharmaceutical companies influence the doctors through published clinical materials on international and multi centered studies. These companies do not just promote drugs and they also promote illness which is considered as a subtle way of promotion (Jueridini and Mansfield, 2001). Medical educational conferences are also likely to influence the physicians' prescribing of drugs (Gibbon *et al*, 1998). Although pharmaceuticals industry gifts are more influential they are considered as less appropriate (Gibbon *et al*, 1998).

### **Product influences**

Studies have revealed that registration of brand names is a persistent problem and drug names are often difficult to spell, pronounce and remember (Castillo and Hopkins, 2003). Licensing of drugs, for prescribing, needs to demonstrate quality, safety and efficacy (Jureidini and Mansfield, 2001). 'Corporate image' has a significant but indirect impact on customer loyalty and loyalty is driven both by disconfirmation of expectations and the corporate image (Ehrensberg and Barnard, 2000). Richarme (2001) argues that consumers form a subset of brands to which they apply decision making strategies.

### **Price influences**

Freemantle and Eastaugh (2002) argue that cost effectiveness as an important factor that influences doctors' prescribing behaviour. Financial pressures have led to use "cost effectiveness" for making decisions about drugs (West, 2002). Richarme (2001) argues that the degree of involvement in purchase decision making is not necessarily a function of the price and is more related to the perceived quality. Product attributes and benefits are also found to be important factors (Phillips, 1984).

### **Place influences**

Availability and out of stock have been found as important place elements that influence doctors' prescription behavior (Ehrensberg and Barnard, 2000). Castillo and Hopkings, (2002) contend that consumers have a tendency to find out what they need to know about prescribed medications from pharmacists. Firm size, frequency of customer contact and use of direct channels of distribution have shown impacts on businesses (Hanssens *et al*, 2004). Ehrensberg and Barnard (2000) observed that discounts given by pharmacies have caused increased sales of drugs.

The conceptual framework developed based on the reviewed literature in relation to the marketing mix and its influence on prescription of drugs by doctors is shown in Figure 1.

## MATERIALS AND METHODS

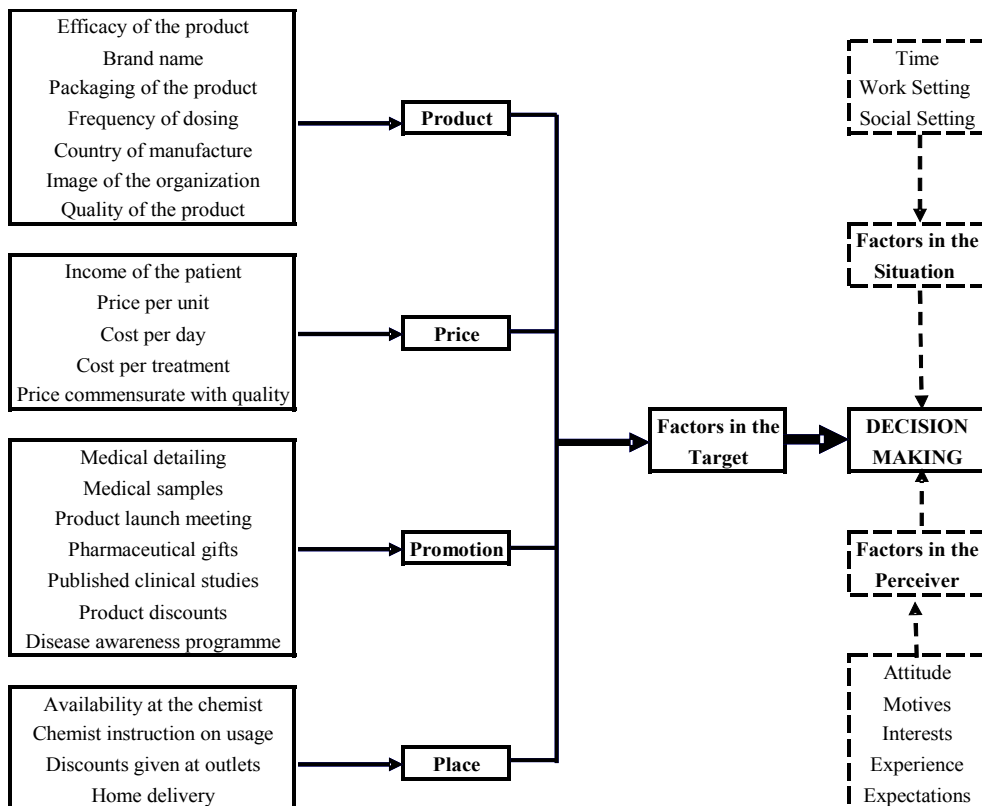
### Sampling

Of the 1,100 board certified specialist medical consultants in the country, the population of ophthalmologists (excluding those who work in Northern and Eastern provinces as well as retired from service) were selected as the respondents of this study. One area of specialty (i.e. ophthalmology) was selected in order to improve the validity of findings through controlling the extraneous variables that are related with different areas of specialties. A total of 63 ophthalmologists were contacted of which 59 ophthalmologists responded (94%) and 4 (6%) non respondents.

### Data Collection

A questionnaire survey was carried out for collecting primary data. The questionnaire was developed based on the conceptual framework depicted in Figure 1. Respondents were given the opportunity to rank each sub element of the outcomes under the four main marketing mix elements based on a likert scale ranging from 1 to 5.

**Figure 1. Conceptual Framework – Factors influencing the decision making of doctors in prescribing a pharmaceutical product**



## Data Analysis

As the study involved ranked data, non parametric statistical methods became appropriate. Kruskal-Wallis one-way analysis of variance on ranks was performed in two levels. At the first stage, the total scores representing the four marketing mix elements were analyzed and in the second stage, ranks of the sub-elements within each main marketing mix element were analyzed. When the null hypothesis i.e.,  $H_0$ : all the  $k$  populations have identical mean ranks, is rejected by the Kruskal-Wallis test, the necessary mean separation was adopted using the procedure suggested by Conover (2006). Only  $(k-1)$  comparisons were made in order to maintain the comparison-wise error rate.

## RESULTS AND DISCUSSION

### Ranking of marketing mix elements

Ranked data of 23 sub-elements of the main marketing mix elements viz., promotion, product, price and place were analyzed using Kruskal-Wallis test. The test statistic (which is distributed according to the Chi-Square distribution) obtained was 84.221. The null hypothesis of equal mean ranks was hence rejected at  $p = 0.05$ . The mean separation carried out subsequently revealed that price element is superior among the four main marketing mix elements, followed by place and product. Interestingly, the promotional element appeared to be the least important (Table 1)

**Table 1. Ranking of marketing mix elements**

<b>Marketing Mix Element</b>	<b>Mean Rank</b>	<b>Remarks</b>
Price	68.31	a
Place	107.97	b
Product	119.19	b
Promotion	178.53	c

Mean ranks denoted by the same letter are not statistically different at  $\alpha=0.05$ .

### Ranking of sub-elements within each marketing mix elements

The analysis was further extended using the Kruskal –Wallis test to identify the sub-elements in the order of importance perceived by doctors within each of the main marketing mix elements and the results are presented in the forthcoming sections.

#### Price element

The ranking of the price sub-elements are shown in table 2. Results reveals that there is no significant difference among all 5 factors (Test statistic = 5.019). It is also evident from the findings that doctors consider the price commensurate with quality, income of patients, price per unit, cost born by a given patient per day and cost per treatment as equally important.

**Table 2. Ranking of price sub-elements**

<b>Price factors</b>	<b>Mean Rank</b>
Price commensurate with quality	160.59
Income of a patient	157.31
Price per unit	148.33
Cost per day	138.58
Cost per treatment	135.19

**Place element**

Place was considered to be the second most important element ranked by doctors together with product element. As shown in table 3 there is a significant difference among the four place sub-elements considered (Test statistic = 50.013).

**Table 3. Ranking of place sub-elements**

<b>Place factors</b>	<b>Mean Rank</b>	<b>Remarks</b>
Availability at the chemist	158.57	a
Chemist instruction on usage	129.25	b
Discounts given by outlets	108.47	b
Home delivery	77.61	c

Mean ranks denoted by the same letter are not statistically different at  $\alpha = 0.05$ .

Mean separation performed reveals that the availability at the chemist to be the most important sub-element. Instruction on usage by chemists and discounts given at outlets were ranked as second most important sub-elements. Home delivery of the pharmaceutical products was considered to be the least important element.

**Product element**

The results of the Kruskal –Wallis test (Table 4) revealed that there is a variation among the product sub-elements (Test statistic = 240.663).

**Table 4. Ranking of product sub elements**

<b>Product factors</b>	<b>Mean Rank</b>	<b>Remarks</b>
Efficacy of the product	329.74	a
Quality of the product	329.74	a
Frequency of dosing	245.36	b
Country of Manufacture	151.62	c
Image of the organisation	148.64	c
Packaging of the product	136.80	c
Brand Name	107.12	c

Mean ranks denoted by the same letter are not statistically different at  $\alpha = 0.05$ .

Mean separation conducted reveals that doctors have a tendency to group the product sub-elements into three categories as shown in table 4. Efficacy and quality of the product were found to be the most important group followed by frequency of dosing. The least important group comprised of country of manufacture, image of the organization, packaging of the product and brand name sub-elements.

### Promotion element

Ranks of the promotion sub-elements are depicted in table 5. The Kruskal-Wallis test indicated that there is a substantial variation among the considered sub-elements (Test statistic = 122.980).

**Table 5. Ranking of promotion sub-element**

Promotion factors	Mean Rank	Remarks
Published clinical studies	302.75	a
Disease awareness programme	262.90	b
Medical detailing	231.75	b
Product discounts	214.03	b
Medical Samples	179.32	b
Product launch meetings	160.02	b
Pharmaceutical gifts	98.81	c

Mean rank denoted by the same letter are not statistically different at  $\alpha = 0.05$ .

Mean separation revealed that published clinical studies have been perceived by doctors as the most important sub-element. This was followed by disease awareness programmes, medical detailing, product discounts, medical samples and product launch meetings. Pharmaceutical gifts are considered to be the least important promotion related sub-element.

### Limitations of the study

It should be noted that the findings of this study could not be generalized to the total population of medical consultants as the study was conducted only among the ophthalmologists.

## CONCLUSIONS

Doctors perceive “price” as the most important element of the marketing mix when pharmaceutical products are being prescribed. The ophthalmologists found to be more empathetic toward the patients as they seriously considered affordability of patients and the value for money of a given product. This aspect was clearly evident since they considered the sub-elements “price commensurate with quality, income of patients, price per unit, cost born by a given patient per day and cost per treatment” as equally important. This was followed by “place” and “product” as the second and third most important marketing mix elements respectively. The availability at the chemist was revealed as the most critical place sub-element and efficacy and quality of the product were the most critical product related

sub- elements. Published clinical studies were rated as the most critical promotion related sub-element that they considered in prescribing pharmaceutical products. Whilst emphasizing on the improvements on the aforesaid elements, pharmaceutical marketer can also concentrate on improving the marketing mix sub-elements which are significant, but ranked second.

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