An Investigation of the Share of Elements of the Marketing Mix for Selling ICP-Monitoring Devices in Medical Centers of Fars, Iran

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Abstract: This study aimed at investigating and evaluating the relationship between the Marketing Mix and selling the ICP Monitoring-manufactured by Möller Factory, Germany-in Fars medical centers, Iran and determining the priority and effective combination of controllable factors on the sale of this product. The research question is whether there is a relationship between a cohesive model of 4P's and the amount of sell for the ICP monitoring device. The society and sample consisted of managers, directors and personnel; the manager and personnel's of the neurology ICU; and medical engineers and neurology ICU wards in Fars, Iran. The present research used elements of the 4P's Marketing Mix and their sub elements as independent variables and the volumes of sale as the dependent variables. To answer the research questions, Wilcoxon's Non-Parametric test was used for the abnormal distribution; and T-Student's parametric test was used for the normal distribution. The results showed that, in general, the element "Product" and its sub elements were the most effective and statistically most significant factors regarding the volume of selling this product. The next significant factors were the elements "Price" and "Promotion" and their sub-elements. "Place" was the least significant factor regarding the volume of sale. The implications of the study for the improvement of the sale of the ICP Monitoring have been presented.

Key words: Medical Equipment Marketing · Company · Marketing Mix · 4P's · Fars

INTRODUCTION

Today, managers of large and small enterprises spend much time on items such as marketing and marketing management. Without boundary trade, technological advancements, changing in customers' taste and selections, mushroom emergence of production and marketing enterprises in all of the aspects of the life such as medical care, are all factors that necessitate the provision of marketing policies accurately and concisely. This research was conducted to investigate the relationship between elements of marketing mix and the amount of sell for the ICP monitoring devices manufactured by Möller Factory in Fars medical centers, Iran.

The problems of this research are; the lack of a cohesive marketing plan based on the marketing mix and; the levels of usage of the Fars medical centers from ICP monitoring device. So this research aims to reply the following questions:

Is there a relationship between a cohesive model of 4P's and the amount of sell for the ICP monitoring device?

Marketing is a social process using it individuals and groups gain their needs and desires by production, distribution and exchanging suitable and valuable goods and services [1]. Today, what we mean and interpret from marketing is very different from its primary definition from early 1890's. In the old definition marketing was only the suggestions for sale without attention to today's marketing complexities. In 1950 marketing science started to pay attention to its complexities. A major cause of this change was due to the welfare extracted from the Second World War and promoted consuming in a new way that was differentiated completely from its previous paradigm [2].

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In this paper for elements of marketing mix (Product, Price, Place and Promotion) has been evaluated in the promotion of sells for ICP monitoring device in Fars Medical Centers. Product is something that the customers are ready to buy and it is the most essential element of marketing mix. Price is the amount of money that customers pay for the product. It is the most flexible element. Place is the site that makes the product available for the customers and it is the channel of distribution. Promotion is motivating the customers to buy the products by means of public relations and promotion [3].

In the followings it will be pointed to some relevant researches in medical devices. Naji [4] conducted a research entitled "the investigation of basic differences of marketing mix in the selection of surgery prostheses amongst surgeons of Tehran, Iran".

Pourabdollahian [5] conducted a research in a paper entitled" the secrets of selling ultrasound devices" investigated factors impacting the buying decision amongst physicians. Amongst all factors, quality of services and Price were the most important factors in buying decision. Rezvani and Khodadad Hosseini [6] in a paper entitled "designing homogenous fuzzy marketing model" resulted to the fact that in the sport production industries, Promotion and its elements of organizational promotions, direct selling and public relations have the most important significance in attracting customers.

MATERIALS AND METHODS

Descriptive statistical procedures including Frequency Rates, Mean, Percentile Rank and Standard Deviation were employed to study and describe the collected data. To answer the research questions, Wilcoxon's Non-Parametric test was used for the abnormal distribution; and T-Student's parametric test was used for the normal distribution. Friedman test was employed to classify the priority of the effect of elements of the Marketing Mix on the volume of selling the ICP Monitoring.

Regarding with local specifications of present research, we identified the employees who are influential in buying decision-making. Statistical population of the research includes neurosurgeons, medical engineers, neurosurgical intensive care units charges, logistics heads and hospital managers that their number is 60.

We used closed questionnaire with Likert scale. The questionnaire contains 32 items in the field of the elements of Marketing Mix and its sub-elements which reflect respondents' point of view. The items assess some components such as product reliability, ease of use,

accuracy of performance, portability, uniqueness, domestic and international standards and certificates, warranties and services, price, non-cash sells and types of deposit, distribution and delivery, promotions, effective presentation, familiarity with producer and vendors, advertisements, offers, public relations, personal selling, etc.

Also we used Test-Retest technique and Pearson correlation coefficient in order to assess the reliability of the questionnaire. The results are as foloows:

Regarding with the results, each main components of questionnaire and consequently whole of it are reliable.

Collected data was analyzed by SPSS-16 package after coding and scoring. In order to compare the elements of Marketing Mix, we used Wilcoxon non-parametric test for non-normal distributions and Student-t parametric test for normal distributions. We also used Friedman test to rank the impact of 4P's on sales volume.

Independent variables. Four main elements of Marketing Mix those are Product, Price, Promotion and Place are independent variables.

Dependent variable. Sales volume is dependent variable in the present survey.

RESULTS AND DISCUSSION

For investigating the impact of cohesive paradigm of 4P's on the amount of sell for ICP Monitoring Device, T-test was used (due to normality of data; Skewness and Kurtosis coefficients gained -0.5 and -0.1, respectively).

Table 1: Distribution of statistical population categories Categories Frequency

	Quantity	Percentage
Hospital Managers	11	18.3
Logistics Heads	11	18.3
NICU Charges	11	18.3
Medical Engineers	11	18.3
Neurosurgeons	16	26.6
OVERALL	60	100

Table 2: The results of Pearson correlation coefficient test for determining reliability of the questionnaire

Scale	Pearson correlation coefficient
Product	0.874
Price	0.993
Place	0.925
Promotion	0.969
OVERALL	0.960

Table 3: T-test for examining the main question of the study

	Mean	SD	Sig.	df	T
Respondents' Score	136.4	4.97			
Criterion Score	128.00	00.00	0.000	59	13.03

Table 4: Comparing the impact of 4P's elements on sales volume

Element	Mean Value	Mean Rank	Product	Price	Place	Promotion
Product	4.65	3.38	-----	0.20*	0.00	0.00
Price	4.50	3.30	-1.28*	-----	0.00	0.44*
Place	2.74	1.04	-6.74	-6.75	-----	0.00
Promotion	4.15	2.28	-6.54	-3.55	-6.67	-----

Notes: The numbers under diameter (-----) are amount of Z and the above ones are significance level.

* not supported (n.s)

The average of respondents grades gained after the distribution of questionnaires was 136.4. The results of T-test showed that the use of cohesive paradigm of 4P's promotes the amount of sell for ICP Monitoring Device (t-value= 13.03, df= 59). Table 1 shows the results.

The impacts of 4 elements of Price, Promotion, Product and Place on the levels of sell for ICP Monitoring Device, are presented in the following section:

The impacts of Product, Price and Place on the amount of sell were investigated using Wilcoxon test. The results showed that Product (Z= -6.7, sig.= 0.000) and Price (Z= -4.67, sig.= 0.000) had a significant impact on the amount of sell for ICP Monitoring device. Due to the normality of distribution, the impact of Promotion was assessed using T-test. The results showed that the Promotion element had a significant impact on the amount of sell for ICP Monitoring device (T= 5.1, df= 59, sig.= 0.000). The results showed that Place had no significant impact on the amount of sell for ICP Monitoring device.

Friedman test was employed to classify the priority of the effect of elements of the Marketing Mix on the volume of selling the ICP Monitoring. The results of the statistical analyses showed that, in general, the element "Product" and its sub-elements were the most effective and statistically most significant factors regarding the volume of selling this product. The next significant factors were the elements "Price" and "Promotion" and their sub elements. "Place" was the least significant factor regarding the volume of sale.

Results showed that there was a significant relationship between the cohesive paradigm of 4P's and the amount of sell for ICP monitoring device. There was a significant relationship between the characteristics of devices and the amount of sell for ICP monitoring device. Also Price and Promotion had significant impacts on the amount of sell for ICP monitoring device. Amongst factors, Place had no significant relationship with the amount of sell. These results indicated that amongst 4P's elements Product, Price, Promotion and Place were, respectively, the most significant elements.

Generally, it should be concluded that there is a significant relationship between 4P's and amount of Sell for ICP monitoring device. The amounts of certainty in the performance of the device fundamentally impact the buyers' motivation to buy the investigated device. The provision of post sale services can significantly improve sells in this regard. Other product related factors can be the ease of use and portability. Licenses and certificates also can ascertain the buyers to buy the product. Price also has a great impact on sells. Individuals who put importance on the price factor were concerned with issues such as the existence of flexible payment schemes, discounts and credit buying. As the results indicated, Promotion had a significant impact on the amount of sell. Thus, employing master marketers and direct sells have a great significant impact on the levels of sell. In this regard, conducting seminars, radio and TV advertisements and Internet marketing can be advised although their impacts were low in the results of the current study.

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