Selecting an appropriate marketing mix using FUZZY AHP technique with an approach on marketing strategies in Nikta Company

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Abstract: The aim of this study is to select the appropriate marketing mix with marketing strategies approach in the Nikta Company in Tehran. Based on comprehensive review of literature relating to the marketing mix and also based on a conceptual model of P4 and the six criteria we arranged a questionnaire and gave it to 30 samples selected from the census sampling. In this study, to asses reliability of the questionnaire, conflict rate and Cronbach's alpha methods used and reliability of the questionnaire has been approved. In this study, Excel software, SPSS software version 18 and the FUZZY AHP technique is used for data analysis. The results suggest that in elements of the marketing mix, the priority is ordered as: promotion and advancement with the sales, distribution, sale price and product. In the promotion mix, respectively the priorities are with the internet, sales staff, participating in the exhibitions, direct marketing, public relations, store atmosphere and media advertising. In the distribution mix, respectively the priorities are with an appropriate location, stock, transport, sort of goods, delivery on time. In the sales price mix, respectively the priorities are with credit conditions, price list, installment sales, discounts and bonuses, and matching the sales price. In product mix, respectively the priorities are with product size, continuity of service, product variety, design and product beauty, product quality, type and form of packaging.

Keywords: marketing mix - product - price - place – promotion- technique- FUZZY AHP.

1 – Introduction

Today's global business environment is together with increasing complexity, rapid changes and unusually developments in the markets (2007, Mason).

Selecting target markets is the foundation for seeking position of firm in order to choose target markets to provide and meet the needs and goals (2002, Dibb & Wensley). In order to achieve these goals, a suitable marketing mix plays a vital role in the fulfillment of appropriate marketing strategies (2004, Kustin). Most common definition for Marketing mix in order to seeking most appropriate position in target market is offering the right product at the right place at the right price and right time (2006, Kimuli). In fact, marketing mix determines, the organization's performance path using a series of controllable variables in the environment that has many uncontrollable factors (1997, Bennett). In this study (FUZZY AHP) techniques With an approach to Marketing strategies, will be used for selecting the appropriate marketing mix. This method allows to estimate, predict and change the marketing mix elements for a marketing manager of the company that eventually led to the selection of a marketing mix for the company.

In this study we will select appropriate marketing mix based on mentioned indicators with regard to the topic literature(literature and review) and researches and surveys which has been carried out through sales and marketing experts.

2 - Definitions and basic concepts:
2-1– Marketing

Marketing is the search for finding appropriate market and sections where organization there can be more useful and effective and be responsive to the people's needs and desires. In other words, marketing is a conscious effort to create some sort of optimized resource allocation and expertise in market. Organization must find its target market in order to better identify its needs, and supply suitable products and services. The basis of marketing movement is to avoid wasting resources and various facilities and to find the most appropriate position for product or the company in the market position. Marketing means market classification or division and determining company's products for the most appropriate Markets (Village and colleagues, 1388).

2-2 – Marketing mix:

Marketing mix, is a set of marketing control tools that company can blends them to meet the target

market, or marketing mix includes all The things that companies can do to affect the demand of their products. These can be classified in to four known variables as four *P* (4Ps). They are: Product, price, distribution and promotion (Cutler and Armstrong,, 1997).

Marketing mix is not a scientific theory. But that decision is merely a conceptual framework that determines manager's base decision in configuring their suggestions for consumer needs. Tools can be used to develop short-term tactical programs and long-term strategies.The marketing mix is extremely influential in informing the operations development and marketing theory. The main reason for the marketing mix is a powerful concept, with that, marketing operating seems to be easy and let it separate from other company's and representative's activities (Lee Goi, 2009).

2-3 - Planning a marketing strategy:

Market-oriented strategic planning is a management process which is responsible for creating and maintaining a reasonable balance between the objectives, resources and variable and unstable opportunities of products markets. Its purpose is to create or change works and products of companies in order to achieve satisfactory growth and profit. (Roosta and colleagues, 1384).

2-4 – Product:

Anything that can be offered to the market, ownership, use or consumption, which includes the physical targets, services, characters Locations, Organizational services, and ideas (Sue Pheng & Martin, 1995).

Mixture or combination of products are going as a tool or device which can define the company's products strategy. Can increase its operations in four ways and can add new products on their own items, in which case it added to mix width or product mix. In this way, there are creating new lines of product which are make the company known in other product lines. Company can increase the current product lines and become a full-scale. Or can add more species of each product and product line effort, this depends on whether it is seeking more fame or seeking fame in a particular field (Cutler and Armstrong,, 1999).

2-5 – Price:

Price, the sensitive marketing mix element, consists of the amounts paid by customers for the product being delivered to (Roosta and colleagues, 1384).

Price has a major difference with the other marketing mix elements, price has incomings but other factors, has costs. So as far as the company's competitive advantages allow them to keep price up. The price effect on production volume should also be considered. Companies are following incoming level (Production volume by multiplying the unit price) which contain the possible highest profits after deducting expenses, simply when you are talking about price that is how much money the customer should pay for a product, Its subsets are: List Price, discount, assistance special payment terms, credit terms (Kazemzadeh and Shekarryz, In 1385).

2-6 – Locations and distribution channel

Distribution channel are paths which organization communicate with each other through them and sells products and services. All of the needs these channels to distribute their products. Distribution channels defined as a mechanism that provides sufficient information for the right people, at the right time and in appropriate locations. Distribution mix, is one of the most dynamic industry and one of the few elements of marketing mix elements that participate in the competitions and also affect other aspects of marketing mix such as price, product and promotion. Distribution channel has a crucial role in the cost formulation, strategy resolution and the profitability of all members of the supply chain. With the rapid growth of the Internet-based channels the connection between the channels becomes more complex. To enhance revenue, companies should accept different marketing distribution channels for a variety of different consumers. A key component of developing effective distribution strategies, is formulating an appropriate marketing mix Is green (Huang et, 2009).

2-7 – Promote sells:

Promotion element is used to create a working relationship with customers. This association is to encourage customers to buy product (Roosta and colleagues, In 1384).

The purpose of " Promote and expand " is the activities that companies are doing to be able to give good information about product value and encourage customers who buy the product. Effective marketing program combines all the marketing mix elements as a coordinator at the time company could offer to value the customers (Cutler and Armstrong,, 1997).

3-Conceptual framework of research

Documented in the review of literature concerning this study is used the conceptual model shown in Fig. 1

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                          │ Selecting an appropriate    │
                          │          marketing          │
                          │            mix              │
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Sustainable competitive advantage	The proposed release plan and models	Product Quality Leadership	Increase Customer Satisfaction	Maintain Profitabil ity	Increase Exports

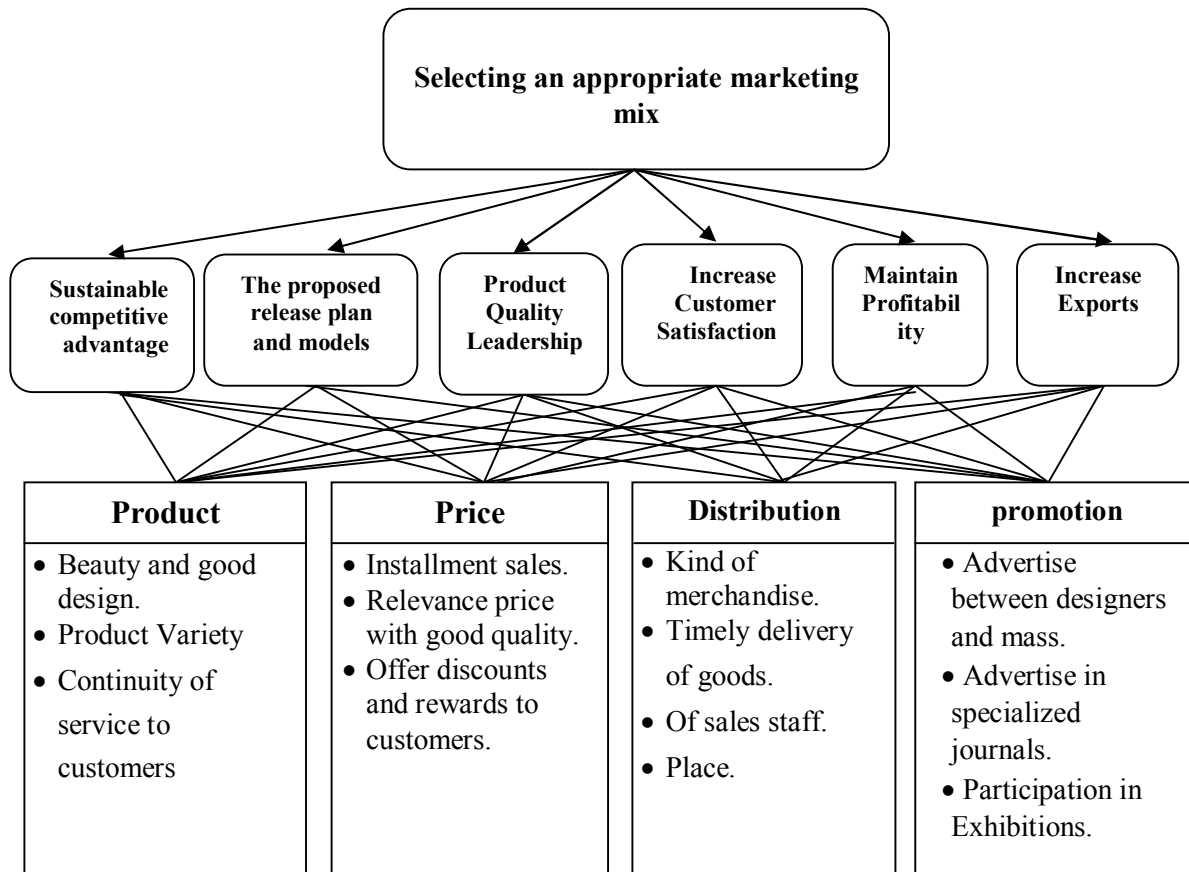| **Product**	**Price**	**Distribution**	**promotion**
• Beauty and good design. • Product Variety • Continuity of service to customers	• Installment sales. • Relevance price with good quality. • Offer discounts and rewards to customers.	• Kind of merchandise. • Timely delivery of goods. • Of sales staff. • Place.	• Advertise between designers and mass. • Advertise in specialized journals. • Participation in Exhibitions.

Fig. 1. Conceptual framework

4- Research Methodology:

The aim of this research is applied research and from doing aspect descriptive - survey method has been used.

Statistical universe includes, 31 managers, specialists and experts of marketing from Nikta Marketing that somehow involved in the sales and marketing.

5 - Methods of data analysis:

Method data analysis in this study is using AHPFuzzy techniques. This techniques is one of the Multi-criteria decision making techniques MADM, And has the advantage that can assess variety of different criteria which have not same unit. This is an important advantage compared to classic methods that all the criteria should be converted to similar units. Other important advantages of MADM techniques is that it you have the ability to measure and analyze The qualitative and quantitative criteria at the sametime. FUZZY AHP is one of the most common techniques of MADM (Asgharpour, 1383).

6 - The methods of collecting data:

 For Data collection There are several methods that fit the period, and time of doing selected research.
In this research, articles, books, research and studies in this area (collected through library And websites compiled Have), raw data is collected through questionnaire tool and method and field. Questionnaire was thus designed questionnaire has been given to, the members of the population.

7 - Data analysis:
7 -1- Calculation He G. Or The marketing mix factors And its sub-group With: FUZZY AHP:
 After collecting data and calculating the geometric mean, Triangular matrix of paired comparisons Criteria and 4P formed and then The calculate weights and prioritize them. In the following calculations the increase of export criteria have been shown.

Table 1. Triangular matrix of paired comparisons 4p in relate with Indicator of increased exports

Increase in exports	Promotion	Distribution	Price	Product
Promotion	(1, 1, 1)	(2/5, 2, 2/3)	(2/5, 2, 2/3)	(2, 2/3, 1)
Distribution	(3/2, 2/1, 5/2)	(1, 1, 1)	(2/5, 2, 2/3)	(2/5, 2, 2/3)
Price	(3/2, 2/1, 5/2)	(3/2, 2/1, 5/2)	(1, 1, 1)	(2/5, 2, 2/3)
Product	(1, 3/2, 2/1)	(3/2, 2/1, 5/2)	(3/2, 2/1, 5/2)	(1, 1, 1)

 After the formation of triangular matrix of paired comparisons,w will calculate SK values which are achieved from multiplying M_{IJ} and M_{KL}As The following.

Table 2. The calculation of the S K Matrix index for exports increased

S_K		$\sum_{J=1}^{M} \sum_{J=1}^{N} M_{IJ}$		$\sum_{I=1}^{N} M_{KL}$	Increase in exports
(0.533, 0.331, 0.219)		(0.067, 0.051, 0.044)		(8, 6.5, 5)	S_1
(0.444, 0.331, 0.193)	=	(0.067, 0.051, 0.044)	*	(6.67, 6.5, 4.4)	S_2
(0.322, 0.203, 0.145)		(0.067, 0.051, 0.044)		(4.83, 4, 3.30)	S_3
(0.222, 0.136, 0.101)		(0.067, 0.051, 0.044)		(3.33, 2.67, 2.30)	S_4

   Now to calculate how big each of the SK in Increased exports in contrast with to the rest of the S K in the index, Then calculate any set of smallest amount and brought in a separate table.

$$V(S_1 \geq S_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_4)} = \frac{0/533 - 0/193}{(0/533 - 0/193) + (0/331 - 0/331)} = 1$$

$$V(S_1 \geq S_3) = \frac{0/533 - 0/145}{(0/533 - 0/145) + (0/203 - 0/331)} = 1.4958$$

$$V(S_1 \geq S_4) = \frac{0/533 - 0/101}{(0/533 - 0/101) + (0/136 - 0/331)} = 1.82$$

$$V(S_2 \geq S_1) = \frac{0/444 - 0/219}{(0/444 - 0/219) + (0/331 - 0/331)} = 1$$

$$V(S_2 \geq S_3) = \frac{0/444 - 0/145}{(0/444 - 0/145) + (0/203 - 0/331)} = 1.7356$$

$$V(S_2 \geq S_4) = \frac{0/444 - 0/101}{(0/444 - 0/101) + (0/331 - 0/136)} = 2.3099$$

$$V(S_3 \geq S_1) = \frac{0/322 - 0/219}{(0/322 - 0/219) + (0/331 - 0/203)} = 0.4482$$

$$V(S_3 \geq S_2) = \frac{0/322 - 0/193}{(0/322 - 0/193) + (0/331 - 0/203)} = 0.5047$$

$$V(S_3 \geq S_4) = \frac{0/322 - 0/101}{(0/322 - 0/101) + (0/136 - 0/203)} = 1.4411$$

$$V(S_4 \geq S_1) = \frac{0/222 - 0/219}{(0/222 - 0/219) + (0/331 - 0/136)} = 0.0164$$

$$V(S_4 \geq S_2) = \frac{0/222 - 0/193}{(0/222 - 0/193) + (0/331 - 0/136)} = 0.1315$$

$$V(S_4 \geq S_3) = \frac{0/222 - 0/145}{(0/222 - 0/145) + (0/203 - 0/136)} = 0.5340$$

While $m_2 > m_1$ there is no need to calculate the large degrees, and this suggests that if we use number 1, We also calculate a large degree of S_i On the other S_i 's we do as the following table, then we achieve normalized weight of indicators and finally according to $W_i = \frac{\hat{w}}{\sum \hat{w_i}}$ relationship,, The number of normalized weight indicator is obtained by the following table.

$V_{(S1 \geq S2, S3, S4)} = \text{Min } V (1, 1.4858, 1.82)$
$V_{(S2 \geq S1, S3, S4)} = \text{Min } V (1, 1.7356, 2.3099)$
$V_{(S3 \geq S1, S2, S4)} = \text{Min } V (0.4482, 0.5047, 1.4411)$
$V_{(S4 \geq S1, S2, S4)} = \text{Min } V (0.0164, 0.1315, 0.5340)$

These numbers represent an increase of exports which are normalized weight.
$W_i = (1,1,0.4482,0.0164)^T$

Now the relationship, $W_i = \frac{\hat{w}}{\sum \hat{w_i}}$ The number of normalized weights of increasing exports index is obtained by:
$W_i = [0.4058, 0.4058, 0.1819, 0.0066]$

All the above steps,include fuzzy calculation that is described above as an example must be done for Individual indicators and promotion mixes, distribution, sales and product prices to obtain normalized weight, the following weights have been calculated.

$W = (0.4652, 0.3834, 0.1439, 0.0074)^T$ Index of maintaining Profitability
$W = (0.3664, 0.2715, 0.2151, 0.1471)^T$ Increasing customer satisfaction
$W = (0.2633, 0.03086, 0.2238, 0.2044)^T$ Quality of leadership
$W = (0.3563, 0.2672, 0.1808, 0.1957)^T$ Drawings and models proposed
$W = (0.3664, 0.2715, 0.2151, 0.1471)^T$ Sustainable competitive advantage
$W = (0.2361, 0.1992, 0.1787, 0.1557, 0.1298, 0.1005)^T$ Total Indexes
$W = (0.1119, 0.0082, 0.1957, 0.0607, 0.0789, 0.0338, 0.5118)$ Promotion mix
$W = (0.0792, 0.0243, 0.1252, 0.0945, 0.1036)$ distribution mix
$W = (0.0999, 0.0092, 0.0918, 0.1262, 0.1031)$ Price mix
$W = (0.0057, 0.0942, 0.1390, 0.1022, 0.1738, 0.4850)$ Product mix

After gaining above weights the relative importance of each factor of Marketing Mix is achived and then for ranking sub categories of mix elements and To obtain the final answer, relative importance coefficient obtained in the above table multiply to the individual weights in the marketing mix sub-group factors, To obtain relative importance coefficient of sub categories of marketing mix according to the table.

Table 3. The Importance coefficients of the criteria and options using the FUZZY AHP

Indicators	Relative weights	Options	Relative weights	The final weights
Promotion	0.3780 [*]	Internet	0.5118	0.1935 [*]
		Sales staff	0.1947	0.0736 [*]
		Participation in Exhibitions	0.1119	0.0423 [*]
		Direct marketing	0.0789	0.0298
		Public relations	0.0607	0.0229
		store atmosphere	0.0338	0.0128
		Advertising media	0.0082	0.0031
Distribution	0.3307	Appropriate location for distribution	0.1252	0.0414 [*]
		Inventory	0.1036	0.0343
		Transportation and Distribution	0.0945	0.0313
		Kind of goods	0.0792	0.0262
		Delivery	0.0243	0.0081
Price	0.1900	CREDIT	0.1262	0.0240
		Price list	0.1031	0.0196
		Installment Sales	0.0999	0.0190
		Discounts and rewards	0.0918	0.0174
		Proportion of sales price	0.0092	0.0018
Product	0.1014	Product size	0.3241	[*] 0.0492
		Product quality	0.1161	0.0176
		Continuity in service delivery	0.2108	0.0141
		Types and forms of packaging	0.0683	0.0104
		Product variety	0.1644	0.0095
		Product and designing beauty	0.1162	0.0006

8-Discussion and com parison:

This section compares the results of researches with the results of this research.

Ketabi and colleagues, (1384) In their research, as selecting appropriate marketing mix the AHP technique with the Marketing Strategic planning approach (Case Study: Marjan Tile Company) Concluded that the thy should focus most of their attention to the beauty of tile appearance, taste, and different cultures, diversity of products, providing continuous service (Before, during and after). Have more attention in pricing and sales, installment sales and discounts. In distribution of products, select the representatives which are able to buy and sell company's other products and purchase a variety of products. In Advertised, providing accurate information and appropriate incentives will be more important.

A research done by team above in terms of subject, case study and techniques used for data analysis and the results are quite different from the present study. In other words, the information of this research analyzed using FUZZY AHP. On the other hand, results showed that the between elements of the marketing mix, the first priority is the promotion and sales advancement. In the promotion mix respectively priority is with internet, sales staff, participation in exhibitions and etc. In distribution mix priority is

respectively with suitable place, appropriate gender balance, transport and etc. In the sales price mix, terms of priority order are, credit terms, list price, installment sales, discounts and bonuses and the sale price coordination. In product mix, the priority order is of size, product quality, continuity of service, type and form of packaging, product variety, beauty and design of goods.

9 - Conclusion:

According to review of literature, it was clear that in the modern literature management any of the manager's tasks such as planning, organizing, controlling and etc are the expression of a decision making. The decisions making on selecting marketing mix elements are controllable and they have interaction with each other. making decision about one of them will affect on any other activity related to the elements and if the marketing mix elements effectively combined so that have coordination with the consumer needs and environmental forces and, in general with the selected target lead to a successful marketing system. Marketing mix forms the foundation of marketing system because it's a combination of the elements necessary for planning and executing all marketing operations. In this article after classifying and ranking the selection of appropriate marketing mix with an approach to marketing strategies were identified that most important marketing mix element respectively were: promotion and advancement of the sale, distribution, sale price and the product. Also the most important sub-categories of marketing mix factors are: Internet has the first priority, second priority to sales staff, product as a third priority, and Exhibition, Appropriate place for distribution, goods inventory, Transport for distribution, direct marketing,, sorted goods, Credit terms, Public relations, price list, Installment sales, product quality, discounts and rewards, continuity in service delivery, store atmosphere, type and form of packaging, product variety, delivery on time, media advertisement, sales price coordination and product and design beauty were between fourth to twenty-third priority.

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