

## Neural Network Approach for Herbal Medicine Market Segmentation

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**Abstract.** Market segmentation is the start point of executing targeted marketing strategy. This study aims to determine fit dimensions and appropriate specifications for the segmentation of herbal medicines market in order to provide production and market departments with fit strategies by identifying the profile of the market customers and recognizing their differences in the identified indices. This is an applied study in terms of objective and a survey-analytical cross-sectional study in terms of method. Data was collected using interview and questionnaire in the qualitative and quantitative sections, respectively. The population of study consists of the end users of different herbal medicines in Iran. Regarding the unlimited population of study, sample size was limited to 460 users selected from active pharmacies located in different regions of Tehran based on stratified sampling method. Neural network technique was used to analyze data and to determine the number of segments. According to the results by running neural network algorithm in different clusters, the best fit market segmentation is practiced by 5 clusters. Each cluster differs with others; therefore a

fit strategy for each cluster should be formulated and executed in order to simultaneously attribute value to both customers and market.

**Key Words:** Behavioral Characteristics, Market Segmentation, Neural Network.

## 1. Introduction

The potential of the producing and supplying herbal medicines and money making capacity of herbal medicines, which in turn results in increased employment, increased welfare, increased export and economic growth is so clear, it can result in human and social development which in turn will realize economic growth. However, achieving such developmental goals need practical requirements and formulating economic growth policies for this industry. The growth of culturing medicinal plants, constructing processing industries and the existence of expertized specialists and producers, who are familiar with the technical matters of production and processing of medicinal plants, are a number of such requirements. Market demand is an important index for economic measurement of herbal medicines. This, in turn, makes it important to identify current status of the domestic market of the products based on potential and practical market demand and to identify foreign markets based on some indices including economy size, trading status of countries and their importing potential. Recent changes in markets and customers and the increased competition between organizations have highlighted the necessity of developing optimal strategies for customer attraction. Some customers are more profitable and the attraction and retention of them is the art of a marketer. This highlights the importance of providing a fit technique for the identification and segmentation of customers. The presumption that all customers are not the same is the fundamental base of market segmentation. This is why enterprises try to determine that which customer should be positioned in which group or segment in order to decrease their costs and earn more money by defining fit marketing strategies for attracting customers being represented by relevant segments. Considering the ever-increasing use of traditional treatment methods and herbs, this study discusses the segmentation of herbal medicines market. The number of companies producing herbal medicines is continuously increasing then with effective market segmentation; it becomes possible to identify fit segments for target markets, to take the

opportunities of current markets, to proper position products in markets and to achieve competition advantage by being differentiated from competitors. Increased profitability is the outcome of such an effective targeting strategy (Hasangholipour, 2014, pp.18-39). A group of researchers studied the segmentation of consuming product and service markets inside Iran. They took different bases into consideration as segmentation bases including product expectation, psychological bases and demographic and behavioral bases. A group of researchers including Horn 1997, Green Grove 2002, Robertson 2005, Chen 2007, Williams and Heller 2007 and Stremersch 2008, involved in the segmentation of organic product markets and adopted similar bases. The majority of results indicate that the behavioral and psychological bases are stronger and more stable than demographic bases for market segmentation purposes. There is no rough study on the segmentation of herbal medicines market inside and outside Iran. Therefore, the researcher identified the necessary bases for segmenting this market by arranging exploratory interview and reviewing theoretical bases and segmented this market with neural network approach. The necessity of quick responses to customers' requests, the continuous change of customers' needs, the increased level of customers' expectations, increased marketing costs, the existence of ever-increasing competitions in different sectors, limited resources and the rapid growth of technology have made it difficult to attract customers and to survive in markets. The above mentioned changes indicate that it is necessary to further know customers and to accurately segment them in order to better respond their needs. Today, among mass marketing approaches, companies use targeted marketing, or in other words, micro-scale marketing in order to achieve customer satisfaction. Market segmentation is an essential concept of this approach. Organizations need to find approaches to defining, formulating and executing fit marketing strategies. This is practiced by more accurate identification of their customers' behavior and segmenting them so that the differentiation of segments can result in the differentiation of similar intra-segment and different out-segment requirements on the one hand and developing fit marketing strategies for each segment

proportional to intra-segment similarities and out-segment differences on the other hand. From long time age, human has used drug to meet his

primary needs i.e. mitigating his pains. In older times, human would use only natural drugs for this purpose the majority of them were being made of medicinal plants. Up to the past century, the development and advancement of pharmacy industry had not exceeded the use of natural drugs and the majority of them were being made of medicinal plants. In recent century, however, the advancements in formulating chemical drugs changed the mechanism and appearance of drug and pharmacy industry and they were completely evolved. Due to such changes, chemical drugs are available and are being used as the main drugs for treating different diseases. By the emergence of chemical drugs, the importance and role of medicinal plants in human health was forgotten. However, herbal medicines have considerably been welcomed overtime due to the increased awareness of people of the negative side effects of chemical drugs on the one hand and the popularity and acceptance of herbal medicines on the other hand so that today the industry of herbal medicines is one of the rare industries with a growth rate with two digits. In recent years, the majority of developed countries have tried to produce herbal medicines, instead of chemical medicines, and to effectively consume them. Mohammad Bagher Rezaei, the CEO of the Herbal Medicines Association as the authorities of the market of herbal medicines in Iran state that, the interest of people in consuming herbal medicines has been increased in recent years more than before and the medicines have a special place in Iranian shopping basket. A major part of such drugs is used to prevent diseases and another major part is used to treat diseases. According to evidences, the interest of Iranian people in health issue has been increased so that a group of customers who trust herbal medicines and are the fans of herbal medicine has been created. Despite the increased number of the consumers of herbal medicine in Iran and the importance of the identification of the medicines' features and their segmentation, there is no study on this field. Considering the positive attitude of many consumers to the preventive and treatment advantages of herbal medicines, especially in recent years, this study evaluates the segmentation of herbal medicines market based on neural network approach and identifies the profile or the characteristics of the consumers of herbal medicines. Considering this issues, the researcher tries to answer the following three questions: 1) what are the best fit

bases for the segmentation of this market? 2) What are the most important characteristics of the customers of each segment and also how the characteristics could be identified and 3) what is the best fit marketing strategy meeting the expectations of each segment?

## 2. literature Review

Parviz Ahmadi, Adel Azar and Fardis Samsami, 2010, conducted a study titled “the segmentation of medicine market based on neural network approach”. According to the researchers, diagnostic and treatment techniques are adopted in the health market and don't mentioned herbaceous medicine. Dimension for segmentation was based on kotler theory. The population of that study was the end users of different medicinal products in Iran and a sample size was computed for this unlimited population. The performed analyses could differentiate the consumers of the market, which had not been differentiated before, and is not currently sensibly differentiated, to six separated segments as, excitable practitioners of medicine market, newly-entered decision makers, elastic accepting applicants, medicine market dependents, medicine market knowledgeable and rationalists. All the segments differed from each other in demographic, behavioral and psychological characteristics. The researchers suggest that the number of sample size should be increased and combined techniques should be used for the segmentation and accurate identification of this market. Seyyed Yaghoob Hoseini and Alireza Ziaei Bide, 2012, conducted a study titled “the segmentation and determination of the profile of green consumers using self-organizing maps”. The aim of that study was to segment green market based on demographic, behavioral and psychological characteristics and to assess the relationship between each variable and the behavior of green consumers. Based on their results, four segments were determined and named as extreme green, potential green, dark egoistic and extreme darks. Their results indicate that demographic variables, including age, sex, income, and psychological and behavioral variables, including individual values, religious fanaticism and environmental attitude and knowledge play a key role in predicting

green consumers' behavior. Williams, 2007, studied the segmentation of green consumers based on their environmental attitude and knowledge



and then evaluated the demographic characteristics of each segment. They divided green consumer's market to three segments, non-aligned, active greens and undefined markets. Segmentation is an important instrument used to understand the diversity of customers. Segmenting customers to different groups and identifying the characteristics of each group result in developing better marketing approaches (Williams and Heller, 2007, 199-213). The bases of market segmentation refer to a group of variables or characteristics used to segment customers to homogeneous groups. Different authorities have introduced the bases of segmenting consuming product and service customers and relevant variables of each base. Wendell Smith (1956) has introduced social class and economic condition of customers as segmentation bases. Cutler (1955), Horn (1997), Lerar (2002), Green Grow (2002), Kumar (2003) and Williams and Haller (2007) have introduced psychological and behavioral factors as segmentation bases. Bolouch (1994) and Punch (1994) have introduced the shopping activities of customers as segmentation bases. Kotler (1995) has introduced demographic, psychological and behavioral factors as segmentation bases. Bronze and Grannet have introduced nutrition style with the components of purchasing motivation, consumption position, quality dimensions of health, innovation and method of purchasing as food industry-specific segmentation bases (Ahmadi, Azar and Samami, 2010, pp.1-20 and Hoseini and Ziaei Bide, 2013, pp.29-36). Herbal medicines are the result of converting some herbs into medicines in pharmaceutical plan during a specific sterile process, but medical plants contain parts of the plant, which after drying are sold without any changes in shop and creams (Zarrin, 2009, pp.38-41). According to recent year estimations, the value of the global market of herbal medicines, including the herbal medicines themselves and their sub-products, has significantly been increased. Considering the fact that the main part of the global market of herbal medicines involve in producing and supplying sub-products deriving from medicinal plants, such sub-products are generally highly added value products. According to available statistics, the value of global markets of herb-extracted medicines experienced an increase by 10.7% in 2012 compared with previous year and exceeded 23.6 billion dollars. This amount reached 30.8 billion dollars in 2014. Considering

this trend, it is expected that that the value of this market will rise to 5 trillion dollars by 2050. Considering the high economic potential of herbal medicines in terms of importing currency and earning, it is possible to both reclaim the less-considered regions of Iran and create a good business market. This can be realized by renovation of farms and by culturing medicinal plants demanded by domestic and international markets or in other words by the targeted use of less-considered lands and producing medicinal plants and processing their effective substances. This, in turn, will raise domestic income and can accelerate the development process in Iran. According to studies carried out in Iran, some of medicinal species which are Iran-specific and indigenous species have very high medicinal value so that by culturing and processing such species, they can both meet domestic needs and introduce to global markets with no competitor. According to the statistics and information published in the national document of medicinal plants and traditional medicine, Iran has 11 climates fit to culturing and producing medicinal plants. Moreover, with 1800 medicinal plant species, the number of medicinal plants in Iran equals to whole Europe. Unfortunately, the number of medicines derived from such plants, which are officially sold in Iranian pharmacies under the title of herbal medicines, is limited only to 220 medicines of which only 10 medicines are covered by insurance. Despite the capacity and potential of Iran in this field, Germany, the U.S. and China govern the global market of herbal medicines and Iran contributes only to 1.9 billion dollar of the billions of dollars circulated in the market of distribution, sales and exportation of herbal medicines. Moreover, the domestic use is not as much as an appropriate level and Iranian consumers prefer chemical drugs to herbal medicines. Herbal medicines contribute to about 4 percent of total medicines consumed in Iran. A total number of 60 cosmetic compounds with plant origination are produced in Iran where the main part of the required raw substances is imported from foreign countries whereas herbal medicines contribute to 71% of total medicines consumed in Germany. The consumption rate of herbal medicines in Swiss, the U.S. and England, Japan and China and India is 35%, 25%, 40% and more than 50%, respectively (Ahmadi,

2010, pp.1-20). In the past five years, thanks to scientific and specialized changes, the Iranian market of herbal medicines has become more

specialized and systematic where it has been disregarded for years. The formation of the committee of herbal medicines and Iranian medicine, the establishment of traditional medicine faculty, the formation of clinics and teaching centers by a group of physicians and pharmacists are manifestations of such changes occurred in Iranian traditional medicine and herbal treatment and show its systematic place in Iran. The limitations of classic clustering techniques necessitate an analytical technique with the ability of creating an optimal solution for segmentation with no need for the information of primary granules on the one hand and the capability of generalizing and modeling systems with voluntary complexities on the other hand. The decisiveness of neural networks is the most important advantage of them in segmentation problems. Another advantage is that following the segmentation the same network can be used in future. In the event of introducing a new data to neural networks, they adopt themselves with the new condition. Therefore, they are ready to be adopted with a turbulent environment. Neural networks better work with complex data and draw a fit map between the multidimensional spatial model of inputs and outputs. They even work with short data thanks to their error tolerance nature as well as their generalization capability, despite gaps.

### 3. Method

Since there was no specific thesis or paper-based study on this field, the following activities were conducted to determine fit segmentation bases and to formulate fit items for the questionnaire. First, the theoretical bases of the study in the field of segmentation bases in general and in the field of green products and organic and food products in special were reviewed. In addition, the dimensions introduced in Cutler (1995), Punch (1998) and Vedel (2002) models and the dimensions introduced in Horn (1997), Brand and Kumar (2003), Lere (2002), Green Grow (2002), Williams (2007), Chen (2007) and Stermech (2008), who studied demographic, psychological, behavioral and personal bases and general features of products, were reviewed. This built a general view on formulating the items of questionnaire. Next, exploratory interview of semi-structured individual interview type was used to provide criteria for

segmentation of this market and to determine the influential factors of customers' decision on purchasing herbal medicines. The above actions were taken because in the secondary studies, no paper or model was found in the field of herbal medicines. The interviews were arranged with 30 cases as follows: 5 herbal medicine producers, 10 medicine salesmen with at least 5 years record in herbal pharmacies, 10 doctors educated in traditional medicine and 5 university professors in the marketing specialized field. A list was extracted for the bases and criteria of segmenting customers and their measures based on which they prefer herbal medicines. A 55-item questionnaire was developed using the findings. The questionnaire, then, was submitted to selected experts composed of experienced consultants with more than 20 years of record in this field, doctors who educated in traditional medicine field, salesmen of herbal medicines and university professors in the fields of management and marketing. Relying on their comments, similar items were merged and the final questionnaire with 51 items was finalized in 2 parts. The first part includes 5 items about the demographic information of responders and the second part has 46 items about the psychological, behavioral and marketing mix dimensions. In this way, it seems that a comprehensive model was created which is proper for segmenting the studied market in which the main components of customer identification with the ability of meeting study needs has been taken into account. In the next step, the validity and reliability of the questionnaire were assessed. Content validity was used to measure the validity of our questionnaire. CVR technique was used to assess validity. The obtained results show the validity of the adopted tool. Cronbach's alpha was used to assess the reliability of questionnaire. But in pilot, it was distributed between 30 customers in random. The obtained results showed that the reliability of each studied characteristic is more than 70% and the total reliability of the questionnaire is 0.73. These calculations showed the validity and reliability of the measurement tool. This research is an applied study in terms of objective and a survey-analytical study in terms of method. It evaluates data associated with a special scope of time and therefore it is a cross-sectional study. Data was collected using questionnaire. The items of this questionnaire were scored using Likert five-scale method; unless items where the studied variables had nominal

scales. The population of this study consists of all end users of different herbal medicines in Iran. Since there was no accurate information about the number of population, it was considered unlimited. Of 60 items used for calculating reliability, 46 items were introduced as the main variables following calculations. Since sample size should be at least 10 times higher than the number of the main variables, 470 questionnaires were distributed 460 of which were valid and usable. Samples were selected using stratified sampling method as follows. In stratified sampling, the units of the studied population are grouped within groups which are more homogeneous in terms of the variable attribute. In this way, changes occurring inside groups are minimized. Generally, a variable which correlates with the attribute of the studied variable is considered as the criterion. In this study, the 22 municipality regions of Tehran constituted the strata in which 67 herbal pharmacies are active. The number of samples for each region was selected proportional to the pharmacies of that region. Factor analysis was used to summarize data and to identify factors. Before executing factor analysis, KMO index of sample sufficiency (Kaiser-Meyer-Olkin) was assessed and Bartlett's test was conducted to examine that whether factor analysis is a fit technique for structure identification (factor model). The results of analyses showed that the questionnaire is fit to factor analysis. This was confirmed considering the significance of KMO and Bartlett's tests, both confirmed the fitness of factor analysis. Factor analysis was conducted using essential component analysis and varimax orthogonal rotation.

**Table 1: Bartlett's and KMO test**

KMO test	0.88
Bartlett's test (Chi-square)	6846.24
Degree of freedom	1035
Sig. level	0.000

Source: the author's findings

According to above table, the number of data is adequate for conducting factor analysis. The factor loading of each variable was first calculated. The higher the factor loading is, the better is the explanation of variables by extracted loads. In the above assessment, the factor loading of no variable was less than 0.5 Therefore; none of them was removed from the model. The following table shows factor rotation matrix

including the factor loading of each variable on 9 residual factors after rotation. The higher the absolute value of the coefficients is the higher is the role of the relevant factor in total changes (variance) of the considered variable. Factor loadings with an absolute value of >0.5 are considered strongly significant. To segment factors, factors with higher factor loading in groups are first selected. Then, by evaluating the results of previous studies, it is determined that the factor should be placed in which group. Factor analysis model in this research was common factor analysis model; the method of extracting factors was orthogonal factors method, the method of factors rotation is varimax, criterion for extracting factors numbers was specific amount criterion and the interpretation of factors based on the significant level of factor loads done.

Table 2: Eigen values and the percentage of explained variance

Primary Eigen values	15.061	3.399	2.292	1.818	1.744	1.391	1.298	1.108	1.060
Explained variance (%)	32.741	7.388	4.982	3.951	3.791	3.024	2.822	2.408	2.305
Cronbach's alpha	0.73	0.70	0.73	0.70	0.80	0.78	0.70	0.70	0.84

Source: the author's findings

Analysis showed that out of 46 factors, 9 factors can be extracted. Rotation matrix show ranking factors in these 9 factors. Factors were named by definition of variables; given the items that they cover and what determines the common reality.9 factor entitled concern about health, distribution, product characteristics, price, purchase intention, attitude, consumption habit, advertising and life style that achieved of psychological, behavioral and market dimension then a new structure is built based on the extracted 9 factors. The extracted 9 factors explain 63.4% of the variance of variables.

#### 4. Findings

This study adopted self-organizing neural network technique. It identifies unknown patterns among multi-dimensional data and shows them in spaces with lower dimensions. Based on the conducted factor analysis, 9



identified factors were introduced as the inputs of the adopted neural network based on which segments were identified and separated from each other. The self-organizing network was applied on different segments. Neural network architecture was performed using the Davic Buldin index. Various modes were tested to 4 cluster of up to 8 cluster indifferent dimension for variable network parameters. The index of 5 clusters in the dimensions (5 and 1) was 1.53, which was the least. Based on Davic index, which has the lowest value is the best number for clustering, so clustering is detected with 5 qualitative cluster. Variance analysis was performed after optimizing the network and determining the number of optimum clusters in determining whether clustering was done correctly, the results show that the zero assumption, which is the mean parity of clusters, is rejected and in all of the investigated factors, there are five significant different clusters. As a result in this market, based on 9 factors, 5 different clusters are meaningfully divided.

Table 4: Specifications of the adopted neural network

Type	Self-organizing
Adopted learning function	Kohonen
Parameters	Kohonen learning rate 0.001
Number of variables in input layer	9
Number of neurons in output layer	Final number of clusters
Number of layers	2
Network topology	Hexagon
Number of dimensions	5
Number of iterations	1000
Distance function	Euclidean

Market segmentation was selected with 5 clusters and then the analysis of the information is based on market segmentation with 5 clusters.

Table 5: Member of each cluster based on SOM

Cluster number	Number of members	Percent of statistic sample
1	154	33%
2	125	27%
3	74	16%
4	37	8%
5	70	15%
Total	460	100%

Source: the author's findings

Five different sections have been identified, based on studies of theoretical foundations of research in the field of marketing and consumer behavior and the result of this research in the field of inferential and descriptive studies, suggestions to marketers and manufacturers to attract customers in each section as well as the realization of two-way profitability for the customer and the market is presented in the same way.

Section 1, entitled customers concerned about health and have good attitude, includes 154 members. The members of this section have assigned a lot of weight to all effective factors in the purchase of herbal medicines. These members assign a lot of weight to Concern about health, in the advertising pay attention to quality Healthy diet and organic for health is important. Life style weighted a lot, so interpersonal communication and increased sense of belonging with an emphasis on the concept of friendship with oneself in advertising messages to increase the frequency of shopping and purchase amount to be used. Measuring the dominant values of a person and the approach to quantity values can be done by using the psychological questionnaire (list of values). This model divided dominant values in two classes. External class with sub scales (sense of belonging, being respected, security, fun and pleasure) and personal value with internal nature with sub classes (self-actualization, excitation, achievement and esteem). Identifying consumer dominant values will be effective in identifying life style and consumption patterns. Consumers with internal dimension care to quality of products, no side effects and avoid additives, while consumer with external dimension conformity with the community and also have a pattern of day consumption and fun in life or pleasure are important for them. Purchase and Consumption intention scored a lot, they try to get herbal medicine, offer their friends to take these products, have a loyalty, and then it is important to pay attention to their interest and their emphasis. With the positive promotion they are doing, each one plays a role of marketers for these products. Use loyal customer incentive programs, which have been alternating and loyal purchaser is important. In identifying the intention to buy and use the following concepts will be useful: Attention to the concept of motivation in avoiding risk (physical

and psychological consciousness) can be used to incitement to buying and consuming. Marketing advertising should be consistent with reducing the risk. Concept of consumption herbal medicines equal quality of products, no side effects and avoid additives, the messages for reduction physical risk that are motivation concepts to increase purchase in consumption intention. Making emotional arousal like happiness and health helpful in buying and consumption intent. The concept of sensitivity elasticity can lead to shopping intent. Marketers should know the customer sensitivity elasticity and encourage the customers to buy their products. In the field of herbal medicines client have sensitivity elasticity about accuracy and health, or in a field of beauty and cosmetic have sensitivity elasticity from beauty aspects. Consumption Habits weighted a lot, the variety of herbal medicine production increase in the form of syrup, pill, powder and drops. In the brochure and product, mention clearly the food and other drug that should not be used during consumption herbal medicine, complication of drug interactions, side effects of these and also prohibited usage. Attitude scored a lot, these Consumers are well aware about these products and they are important for treatment, prevention and beauty. Consumer in this section important to create trust and confidence in the patient by consultant, introducing people who have treatment is important. People in this section important to co-operations and attention of consultants and physicians based in the pharmacy, and stated that, their advice is an effective factor in making purchasing decisions, then consulting to these members is recommended. Product Characteristic weighted above average, People in this section have considered the standard product qualities. Obtaining standards by the manufacturing sector and introducing to consumers is important. People in this section state that, flavored in the form of syrup and drops is an important factor in admission of these products, Then producers need to think about the importance of taste and freshness or explain organic flavors without additives and healthy continuously. In the other hand for people sensitive to the taste and flavor drug produce in the form of pills and capsules. Product label, broacher, introduce content and advantages of this product clearly and accuracy. The quality packaging of the product is also emphasized by the people in this section. People in this section

prefer domestic products, but local production volume is low, as a result a program for increasing domestic production, build and operation of manufacturing plants plan inside. These marketing strategies important in planning about product features: In the section on customer service, track sales, get feedback of customer based on market embeddings concept is important. This term use to describe the situation in which social connections between purchasers and sellers fulfilled value of the product to increase the value of the transaction. Gashtalt approach concept to conceptual organization of consumer through packaging design. Price scored above average, People in this section state that, price is considered an effective factor in buying decision. So manufactures should pay attention to this or express cause the price for these products and attempt to change the consumer's attitude and promote this thinking that the value of these products is more valuable than the payment for purchase. (Trying to increase the willingness to pay). To reduce the price, attention to Weber law concept is important. Reduced product price over the JND effects and increase in production price lower than JND effects. For herbal medicine purchasing like chemical medicine insurance book to be considered, which reduces the cost of customers, in particular, the use of these drugs in terms of treatment and necessity versus beauty aspects. These members allocate a lot of weight to distribution. They point to the availability and ease of purchase. An increase in the number of plant pharmacies in the city is needed. Advertising scored above average, People in this section are fully aware of product benefits and based on previous experiences make a decision for purchasing, but they have given high profile advertisements, then marketing department should inform customers of new products by announcing advertising. Advertising department increased the level of mental conflict about these products. If the amount of mental conflict increases, the processing of information is done more and more deeply. Understanding the abstract nature of consumer and displaying advertisements based on these attributes. In this section people have a high health motivation and aware about product values, then based on motivation-personality theory(3M)that introduce four main attributes, this section people have situational trait, then advertising that boosts product value and health motivation recommended. Advertising

department has to match their advertising with the target market itself. To attract woman attention, they must know that women have conjunctive features in versus men have a separatist compound traits.

Section 2, entitled price oriented potential customers includes 125 members. The members of this section have assigned above average weighted to all effective factors in the purchase of herbal medicines and the price factor has been assigned more than other factors. The members of this segment scored to factors include: Concern about health, Life Style, Consumption Habits, Attitude, Product Characteristic, Distribution and Advertising above average then similar strategies in section 1 is recommended. To Purchase and Consumption intention scored lower than average then producer should increase supply based on their interest and expectation but with consider the price, Because the price present the main factor in terms of people in this section. These members score the price a lot, so media advertisements and displaying the processing of herbal medicines which can indicate hard work for preparing, work quality, safety and health of herbal medicines can change the perception of the value of money in compare benefits are derived of these products and justified the price.

Section 3, entitled value oriented 1 customers includes 74 members. The members of this section have assigned above average weighted to some effective factors in the purchase of herbal medicines, only the factor of consumption habits is lower than the average and the life style and distribution factors are very important for them. These members scored to Concern about health, Purchase and Consumption intention, Attitude, Product Characteristic, Price and Advertising above average then similar strategies in section 1 and 2 is recommended. For these member life style scored a lot, Life style dimensions especially Security concept and achievement sense are so important for people in this section, then advertising department should emphasize achieving security, life span, health and beauty in promotion. Consumption Habits are Lower than average then Similar strategies in section 1 is recommended. Distribution scored a lot Development of distribution channels through the chain of retailers should be considered. And also the physical structure of pharmacies is important for people in this section then pharmacies should improve the physical and structural

space of the pharmacy for persuading people in this section is important.

Section 4, entitled advertising oriented potential customers includes 37 members. These members scored above average to Concern about health, Life Style, Consumption Habits, Attitude, Product Characteristic, then similar strategies in section 1 is recommended. Purchase and Consumption intention weighted lower than average, so similar strategies in section 2 is appropriate. Price weighted lower than average, this factor is not effective factor in purchase decision making for them, but if they trust advertising, product features and distribution create satisfaction for them; they are willing to pay a higher price. Scored a lot to the Advertising, so People in this section should trust the advertising, it seems the efforts of pharmacists and doctor advisors to introduce and this product is more effective in compare with media, brushers and stand methods.

They were titled as customers with negative attitude who are disinterested in their health status. This section includes 70 members. They assigned a low weight to all factors. People in this sector are not a good market for marketers and it seems that, marketing planning and targeting in this section is not at all helpful and profitable. Perhaps marketing department should pay the least attention to this market segment. On the other hand unfortunately, a large number of people are assigned this section, so marketers and producers are better do at convincing marketing effort for people in this section. The customers of this segment assigned a very low weight to the components of health interest index. They are disinterested in their health status. Consulting along with provide incentives can change their attitude about this products and maintaining their health. They assigned a very low weight to life style and are not value-oriented customers then, emphasize on the concept of security and sense of accomplishment in the message text maybe useful. Purchase and Consumption intention is low in this segment. Attention to the concept of motivation in avoiding risk (physical and psychological consciousness) can be used to incitement to buying and consuming. Marketing advertising should be consistent with reducing the risk. Concept of consumption herbal medicines equal quality of products, no side effects and avoid additives, the messages for

reduction physical risk that are motivation concepts to increase purchase in consumption intention. Making emotional arousal like happiness and health helpful in buying and consumption intent. The concept of sensitivity elasticity can lead to shopping intent. Marketers should know the customer sensitivity elasticity and encourage the customers to buy their products. In the field of herbal medicines client have sensitivity elasticity about accuracy and health, or in a field of beauty and cosmetic have sensitivity elasticity from beauty aspects. Advertising the health and safety of herbal medicines in which no chemical substance is used can attract the customers with negative attitude, who are disinterested in their health status. advertising department design scenario advertising, the way depict people change the attitude of herbal medicines from chemical medicines through showing the positive effect of these of these product on the treatment, prevention and health. The customers of this segment distrust herbal medicines. Therefore, marketers should provide them with real references i.e. they should introduce people who have used the products before or currently buy them in order to attract the confidence of the customers. In addition, marketing department should collect the feedback of customers or should distribute questionnaires between consumers in order to find that why they distrust herbal medicines. -the concept of natural medicine should be explained via arranging public information campaigns (PCI). The awareness of the customers of the medicines should be increased and the advantages and usefulness of herbal medicines should clearly be explained to them. Clarifying the differences between herbal and chemical medicines seems beneficial in reducing consumers' confusion. For people in this section, emphasize on change in their attitude and concern for health maybe suitable. As long as they are indifferent these two factors, normally that they do not think about product features, price and distribution at all, so initially their attitude and their life style must change. The public Department should propagate the knowledge and information associated with the importance of herbal medicines because the consumers announced that they are not aware of the advantages of herbal medicines.

This study differentiated 4 segments with essential differences in the studied key characteristics. Since the studied variables differ from a

segment to another segment, it is necessary to formulate segment-specific marketing strategies. It is suggested that the benefits expected by customers in special demographic, psychological and behavioral segments, especially segments 1 and 3 with the maximum number of customers, be studied and applied. The results of evaluations indicate that females and age groups 26-35 and 36-45 account for the majority of consumers. Therefore, they can be considered as the target market. Achieving success in the target market demands market-specific investigations. Advertisements should be designed based on the interests of females on the one hand and plans for product specifications should take into considerations the interests of females on the other hand. The probable diseases of this age range should be assessed and fit medicines with treatment purposes should be introduced. This age group involves in neural diseases, stress-induced digestion problems, heavy duty works and insufficient sleep. However, they less involve in Alzheimer, osteoarthritis, diabetes and respiratory diseases. Given this, it is suggested that the production and market departments should produce, advertise and supply fit medicines. Studies should be carried out in beauty field and medicines fit to the beauty concerns of this age range should be produced and introduced. For example, the people of this age range are worry about their skin, hair and nail health and their body fitness. Therefore, medicines which best fit with the elimination or mitigation of such concerns should be introduced. Probably, there will be demand for anti-wrinkle creams and lotions rather wrinkle removing creams and similar products. Disease prevention and reduction of aging rate should be studied. The medicines introduced in the preventive field should be strengthening, not treating, medicines. For examples, special medicines for strengthening immune system or preventing hereditary hair loss should be introduced. Moreover, since our target market covers employed busy people who spend a major part of their time at work and in organizations, the production and market departments should understand their condition and design the form of medicines proportional to their conditions. It seems that they are more comfort with pills and herbal capsule than herbal teas or syrups. The market department should take into consideration the interests of this age group in the design, size and color of medicine packs. A small size pack colored with



year color is an ideal pack in the view of this age group and they prefer it to large, space-taking and classic designs. In the process of designing advertisements, it should be taken into consideration that the people of this age group are generally university students, employees of organizations, fans of sport clubs and cultural environment practitioners. Therefore, if advertising is practiced using a stand or a billboard, they should be installed near clubs and stadiums or near a large luxury shopping center, not near retired people centers, schools or home for the aged. Furthermore, if the products have been designed to be advertised by a teaser, the teaser should be broadcast before popular TV series interested by this age group or at night hours when they are at home. Obviously, if the target market is the aged people, mornings will be a more fit time for broadcasting such teasers. People of this age group have not much time for watching TV. Therefore, TV is not a fit media for communication and advertisement purposes. Since the majority of them are skilled in the Internet and are interested in social media, which are generally accessible to them, social media are generally a fit tool for notification, encouragement and reminding. Long story short, the accurate identification of this market and the accurate segmentation of it on the one hand and the recognition of the expectations and characteristics of the customers of each segment can aid producers to use their capacities for optimal production of herbal medicines proportional to the market demand. In addition, marketers should formulate marketing mix strategies based on issues which are important for the customers of each segment. Through targeted production and marketing, they should provide the infrastructure of the development of this industry which will be accompanied by human resource, social and economic developments.

## 5. Conclusion

Since the customers of different consuming products may have different requests and preference, this study can be assessed in other fields. In addition, the evaluations of the role of the government and economic policy makers in the development of this industry and the evaluation of the contribution of the development of herbal medicines to the indicators of human resource and economy development are of high importance.

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