



Targeted Marketing in Herbal Medicine; Application for Grounded Theory and K- Mean Algorithm

Azita Sherej Sharifi ^a, Ghasemali Bazaee ^{a,*} and Seyed Abbas Heydari ^a

Received: 18 November 2018,
Accepted: 08 February 2019

Abstract

One of the major industries to meet the expansion goals in human, social, and economic aspects is herbal medicine. Marketing department, producers, and entrepreneurs play an important role in applying potentials in this industry, but, as herbal medicine scholars argue, herbal medicine market share in Iran is less than 4 percent. This might be due to neglecting executive targeted marketing. The participants of the study included all people going to pharmacies to purchase herbal medicines. Purposeful and classified sampling methods were used in qualitative and quantitative sections, respectively. As to the qualitative phase, grounded theory method was applied, while K-means approach was used for quantitative data analysis. Qualitative findings resulted in the extraction of eight essential categories. Moreover, the results of K- mean algorithm suggested that the best mode is segmenting this market (i.e., herbal medicine) into four segments. The segments differ from each other in terms of the selected categories. Results contribute to presenting an appropriate strategy for each segment in order to simultaneously create value for both customers and market in particular and create facilities for expansion and growth of herbal medicine industry in general.

Keywords:

Behavioral characteristics; herbal medicines; market segmentation

^a Department of Business Management, Central Tehran Branch, Islamic Azad University, Tehran, Iran

* Corresponding author's email: Bazaee.ali@gmail.com

INTRODUCTION

Humans have consumed herbal medicines to meet their basic needs for treating illnesses and relieving pain since ancient times. In the last century, concerning the development of the chemical medicine industries, the mechanism of the pharmaceutical industry has evolved. Over time, the awareness of the adverse effects of chemical drugs on plant-based medicines has raised considerably. Therefore, in today's era, the herbal medicine industry is one of the few two-digit growth industries (Roediger & Ulrich, 2015). The main reason for the Chinese, the German, and the American consumers to believe in herbal medicines is the fact that 42.9% of them state that these products are healthy for humans (Sevil, 2016). According to Ayazi (2017) the experts of the herbal medicines market in Iran, people are willing to use herbal medicine and their eagerness has been growing over the past several years. On the other hand, the number of herbal drug manufacturers has also increased. Regardless of the increasing number of herbal drug users as well as herbal drug production in the country, unfortunately, the market share of herbal medicines is less than 0.3% of the total sales of drugs, resulting in not having an effective contribution over chemical drugs (Jamshidi, 2016). It seems that market segmentation, which is one of the most important stages of implementing targeted marketing, has been forgotten. Based on effective market segmentation, it is possible to identify customer's attribution and select the appropriate sectors for targeting the market, providing an appropriate market position, and achieving competitive advantage by creating a distinctive competitors, leading to increasing profitability. These market agents should also find ways to identify, formulate, and execute their marketing strategies by more accurately and effectively identifying customer's behavior. The purpose of this study was to identify the appropriate factors for the segmentation of the market of herbal medicines and then the profile of the customers' cognition about

these products. Moreover, based on the most important characteristics of each section, appropriate strategies should be presented to each section, in such a way that customers' satisfaction with different characteristics and productivity gains in the production and market segment can be realized.

Herbal medicine has had a long history. Documents obtained from the Native American, Chinese, Egyptian, and Persian physicians show that plants were used to treat many diseases. At that time, herbal plants have been the only natural treatment. In the last century, by the development of synthetic drugs, the mechanism of the drug industry and pharmaceuticals has undergone complete changes, and chemical drugs have been mainly available to treat diseases. The advent of synthetic drugs led to forgetting the role and importance of medicinal plants. However, awareness of the adverse effects of chemical drugs as well as their side effects has gradually resulted in the popularity and desirability of herbal medicine (Chen & Burgers, 2017). Thus, nowadays, herbal medicine is considered as one of the few industries with double-digit growth, causing the increased production of medical plants by the developed countries in recent years (Yosini, 2012). Iran has many potential to produce herbal plants because of desirable conditions, such as good climate, fertile soil, and so on. Some types of plants are solely devoted to Iran on the one hand, and the quantity of medicine herbs in Iran is equivalent to the whole herbs produced in united Europe, on the other hand, turning Iran to the greatest supplier of medical plants and herbal medicine (Gheybi, 2018). Although herbal plants include more than 2,500 species, they have unfortunately allocated only \$ 70 million worth of medicinal herbs, which is worth \$ 124 billion. Iran, which used to be one of the pioneers of pharmaceutical plants in the past, has now fallen to 60 in the world and its share is only less than 0.4 percent of the total world trade in herbal medicine (Yavari, 2018).

Moreover, despite the high consumption of drugs by the Iranians, especially for arbitrary use, non-prescription of domestic consumption is even very little. According to [Kheyri \(2018\)](#), director of Public Relations of the Pharmaceutical Society of Iran, the total per capita consumption of medicine in Iran is 3 times the global standard. Each Iranian has an average of 339 medications per year, which is 4 times the global rate. Unfortunately, per capita consumption of herbs in Iran is 25 grams per year. Meanwhile, in Germany, consumption is 900 grams per person and 2500 grams in the United States. In a survey conducted by the World Health Organization in 2017, it was found that about 80% of the population of developed countries relied on therapies based on herbal medicine.

According to the [Iran Ministry of Health and Medical Education \(2018\)](#), about 3 percent of the Iranian population use herbal medicine. There are 655 types of herbal medicines and 4,200 types of chemical drugs in the Iranian market. Of course, according to the Director General of the Office of Natural and Herbal Medicine in September 2017, the popularity of these products has increased since five years ago. In the report of the [World Health Organization \(2018\)](#), the number of herbs listed in the drug document in Iran was 655, the number of herbs used in the production of herbal medicines was 599 species, and the number of producing companies was 103 ([HajiMirRahimi, 2017](#)). Despite the popularity of these products and the increasing number of companies involving in this industry, it does not have the appropriate position based on its potential.

Thus, there is a question that why there is little market share in Iran. Not only has not this market had any success in domestic market, but abroad market, such as Arabic or central Asia markets, have also been forgotten, denoting lack of accurate plan for export. It seems that little market share originates from neglecting or inability to executive targeted marketing. The first phase of targeted marketing is segmentation. Market segmen-

tation refers to division of whole market into segments whose members have different features in each segment. Market segmentation is based on the assumption that the consumers have different interests and expectations, which demands marketing activities to be compatible with those features and interests of each segment ([Kotler & Armstrong, 2013](#)). Selecting the dimensions as well as algorithms for segmentation is important because accuracy and reliability of result depend on such decisions. By considering the customer's feature in each segment, interests of each segment about these products and their weaknesses, or the reason for purchasing and none-purchasing are introduced regarding customers' viewpoints ([Diaz & Hoefkens, 2009](#)). This cognition provides good intuition for entrepreneurs to produce good ideas; for manufactures to focus on these ideas; and for marketing department to realize customers' needs individually rather than as a mass, finally leading to macro-level prosperity and advances in this industry (i.e., herbal medicine). Hence, the present study aims to answer these questions: what are the most appropriate bases for the segmentation of this market? What are the most important characteristics of the customers of each segment? And what is the best marketing strategy for entrepreneur, producer, and marketing department for realizing the expectations of each segment?

METHODOLOGY

By adopting a mixed-method approach, the present research benefited from qualitative and quantitative methodologies. As to the qualitative phase, an interview has been conducted. The participants of the study included all those people who went to pharmacies for the purchase of herbal medicines. Purposeful sampling was used in the qualitative section. Interview sessions were carried out with the participation of 30 people including 10 clients who went to herbal medicine pharmacies, 10 traditional physicians who armed the customers with medical

consultations at the pharmacies, five managers in the manufacturing department, and five university professors majoring in Marketing Management. In fact, interviews were done to identify the effective factors on the decision of herbal medicine purchase. Strauss and Corbin's method has been used to analyze the data in the qualitative section. Coding in Strauss and Corbin's method consists of three stages including open, central, and selective coding, which are conducted through continuous comparison method. Interviews transcripts were also loaded in MAXQDA 10 software. On the other hand, the quantitative methodology involved the administration of the questionnaire among 460 consumers of herbal medicines. The rationale for the number of participants lies in the Secaran's (2011) justification that the items of the questionnaire ($n=46$) should be ten times for having a reasonable number of participants ($n=460$). It is noteworthy that the questionnaire identified the customers' features based on the categories emerged from the interviews. Participants' sampling in the quantitative phase was based on classified method. In the qualitative section, the construct validity of the interview has also been achieved by designing interview questions with respect to different aspects and not focusing on limited questions. In addition, internal validity of the interview was obtained by the selection of purposeful samples, by open coding in the development of concepts, categories and their characteristics, by the central coding for the development of relationships between categories and subcategories, and by selective coding in the integration of the categories. Finally, external validity has been accomplished with perfect development and description of the data. On the other hand, by doing accurate and thoughtful considerations on the interview process and by creating structured process for the implementation and interpretation of interview, its reliability was achieved. As to the quantitative validation of data, content validity ratio test (CVR) was used to measure

the validity of questionnaire. The validity coefficient was found to be more than 0.69 for each item, indicating the reasonable and acceptable measure of validity. The results of the reliability measurement of the questionnaire, which was measured through Cronbach's Alpha, also acknowledged the reliability of questionnaire. Factor analysis was used to optimize the measurements. The value of the index of the adequacy of the sample size and also the significance level of the Barlett test calculated (Table 2). As to data analysis, K-Mean approach was used to determine the number of segments. In fact, among the split clustering algorithm, K-mean approach is considered as a common method for market segmentation. Moreover, this is a non-hierarchical clustering method that is faster than the hierarchical clustering algorithms, and is used for the abundance of data (Secaran, 2011).

Based on the qualitative reviews, the main categories and paradigm of the research were obtained (Table 1 and Figure 1). Finally eight main categories were identified as factors influencing the decision to purchase herbal medicines. Then, based on the findings of the interview and studying theoretical foundations of the current research a questionnaire was developed. The value of the index of the adequacy of the sample size is higher than 0.5 that is the indicative of the adequacy of the data. Also, based on the significance level of the Barlett test (Table 2), factor analysis was found to be an appropriate tool for identifying the model.

The results of factor analysis show that out of 46 items, 8 factors can be extracted. These 8 factors are the criteria for segmentation. Factors were designation in term of the measure what a shared reality and according to the items they cover. 8 categories, including concern about health, distribution, product characteristics, price, purchase intention, attitude, advertising and life style. to understand that these factors covers what percentages of the criteria required for segmentation, two indexes include Primary

Table 1
The Main Categories and Their Constituent Codes

Selective coding: The main categories	Market categories of herbal medicines (central codes)
Psychological dimension (Awareness about health)	1. Awareness about health A) Awareness of inner feelings B) Awareness of the disease 2. Stress and worry about the disease A) about your illness B) about family related illness 3. confidence in herbal medicine A) side effects B) drug intervention
Psychological dimension (Life style factor)	1. Satisfaction of life A) belonging B) self-respecting 2. Enjoy life A) communication ability B) fell successful 3. Security considerations
Behavioral dimension (Purchase purposes factor)	1. Use of herbal medicines to prevent A) introduction to friends and relatives b) recommend to other people 2. consumption for cosmetic and hygiene
Behavioral dimension (Attitude)	1. Belief about healing properties A) the interest in using natural materials b) belief about consulting services c) enjoy the flavor of medicine
Marketing mixture	1. Advertising: A) Branding 2. Distribution A) number of pharmacies and traditional medicine center b) physical structure of pharmacies c) availability 3. Price A) purchasing power b) willingness to pay 4. Product characteristic A) packaging B) taste c) standards d) appearance of drugs

Table 2
Bartlett's and KMO Test

KMO test	0.88
Bartlett's test (Chi-square)	6846.24
Degree of freedom	1035
p-value	0.000

Eigen Values and Explained Variance calculated.

The above-mentioned categories were the sub-divisions of psychological, behavioral, and market dimensions. Then, a new structure was built based on the extracted 8 categories. Table 3 shows the values for 8 factors. They explain 63.4% the variance of the variables. Before implementation of k-means approach for data analysis, appropriate number of cluster was recognized with Akaike's Information Criterion (AIC). Accordingly, the most optimized number of cluster is where large distance ratio is observed. AIC criterion value and distance ratio were calculated from 1 to 12 clusters. Analysis indicated that the mar-

ket segmentation to four clusters was considered as the best state (Table 4). Davies Bouldin index use distance criteria with cluster center for calculating sum square within group (SSW) and center combination criterion for calculating sum square between groups (SSB). This index definition is based on the lowest SSW and the highest SSB. When this index is minimum, clustering will have a best quality (Momeni, 2011). Results demonstrated that, clustering to four clusters had a best quality. Besides, variance analysis was implemented into clustering. In ANOVA Analysis, four meaningful different clusters were created (Table 5)

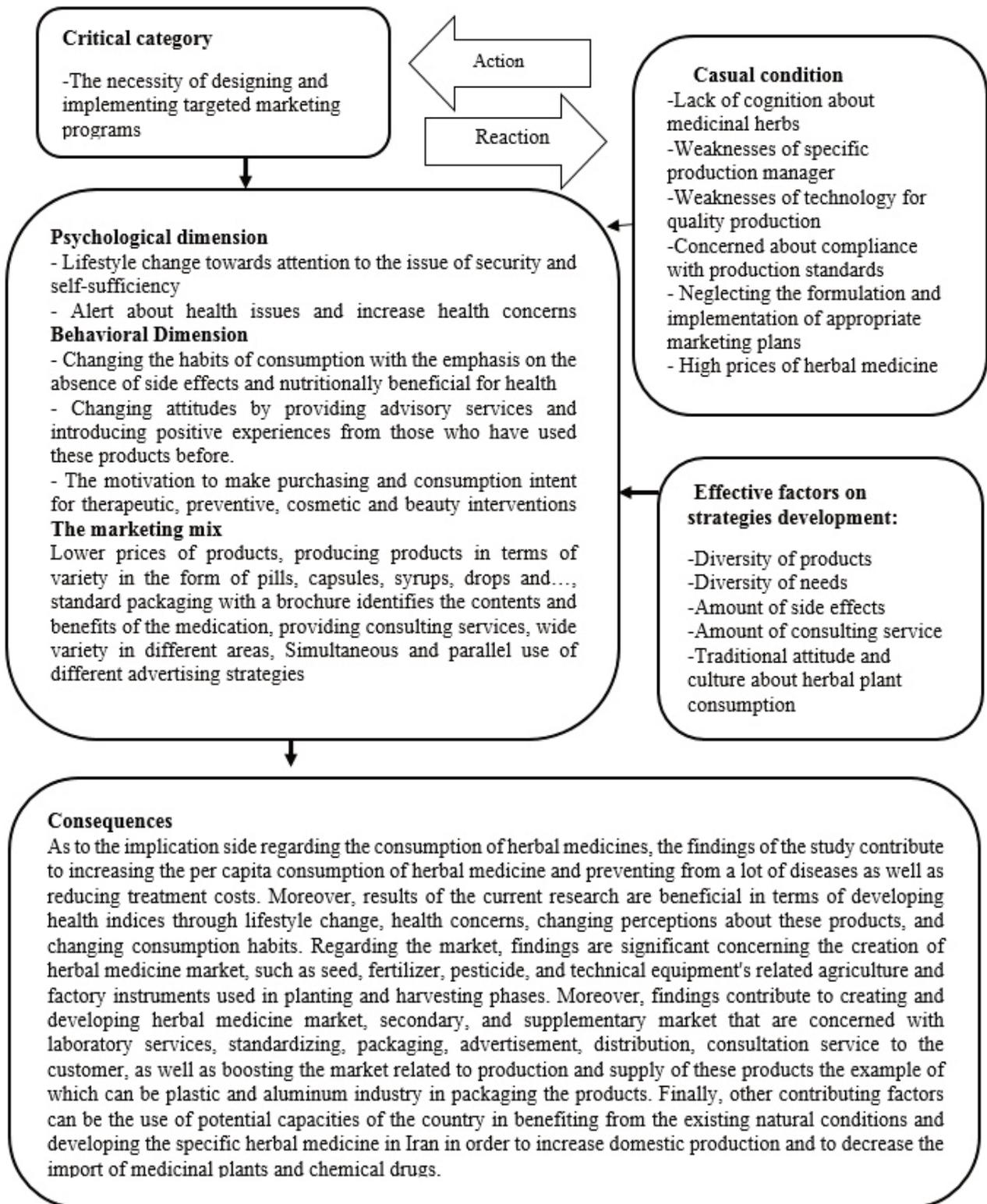


Figure 1. The paradigm model results from research in the qualitative section

Table 3
Eigen Values and the Percentage of Explained Variance

Factors	Health concern	Distribution	Product characteristic	Price	Purchase intention	Attitude	Advertising	Life style
indexes								
Primary Eigen values	15.061	3.399	2.292	3.116	1.744	1.391	1.108	1.060
Explained variance	32.741	7.388	4.982	6.773	3.791	3.024	2.408	2.305
Cronbach's alpha	0.73	0.70	0.73	0.70	0.80	0.78	0.70	0.84

Table 4
Number of Clusters Based on AIC Criterion

Number of clusters	Akaike's information criterion (AIC)	AIC change ^a	Ratio of AIC changes ^b	Ratio of distance measures ^c
1	4861.787			
2	4148.219	-713.568	1.000	1.385
3	3645.069	-503.150	0.705	1.432
4	3306.955	-338.114	0.474	1.482
5	3093.168	-213.787	0.300	1.259
6	2932.465	-160.703	0.225	1.041
7	2779.809	-152.655	0.214	1.356
8	2678.785	-101.025	0.142	1.057
9	2585.626	-93.158	0.131	1.040
10	2497.795	-87.831	0.123	1.294
11	2439.904	-57.891	0.081	1.087
12	2390.148	-49.756	0.070	1.020

Table 5
ANOVA Analysis for Each Cluster

	Mean square	Df	Mean square	Df	p-value
Product features	32.804	3	0.268	456	0.000
Price	126.643	3	0.449	456	0.000
Distribution	77.573	3	0.452	456	0.000
Advertising	126.080	3	0.660	456	0.000
Concern about health	26.762	3	0.323	456	0.000
Life style	42.512	3	0.360	456	0.000
Purchase intention	21.685	3	0.480	456	0.000
Attitude	22.851	3	0.300	456	0.000

The mean of all factors is greater than the expected average 3 (Table 7), so, the center of gravity of the variables and the resultant values are in favorable conditions. This indicates the importance of these factors from the consumer's point of view; the findings of the descriptive studies of the variables of the research provide valuable insight for the researcher to develop practical guidelines and marketing strategies to pay more attention to the items mentioned by herbal medicines customers.

The segments were titled based on final center of clusters (Table 6). Segment 1 with 236 members was entitled customers with positive attitude who were interested in their health status. The members of this segment were assigned higher weights to all characteristics compared to other segments, except product

specification. Segment 2 with 55 members was entitled customers with negative attitude who were reluctant to their health status. The customers of this segment were assigned low weight to all factors. Segment 3 with 94 members was entitled lifestyle-oriented potential customers who were assigned highly-moderate weight to more categories, except lifestyle. Segment 4 with 75 members was entitled price-oriented potential customers who were assigned highly-moderate weight to more categories, except purchase intention and advertising. The following tables present the customers' profile of each cluster as well as marketing strategy guidelines based on final center of clusters, highlighting the importance of each category in cluster concerning the customers' viewpoints.

Table 6
Final Center of Clusters

Features / segments		1	2	3	4
1	Product characteristics	3.96	2.60	3.62	3.18
2	Price	4.56	2.02	3.17	4.07
3	Distribution	4.40	2.65	4.26	3.01
4	Advertising	4.58	2.92	3.87	2.16
5	Concern of health	3.73	2.59	3.88	3.15
6	Life style	3.56	2.51	4.48	3.06
7	Purchase intentions	3.51	2.45	2.94	2.91
8	Attitude	3.74	2.56	3.42	3.20

Table 7
Description Statistics of Selected Factors of Psychological, Behavioral and Marketing Mix Dimensions

Factors		Average	Variance	SD
1	Concern about Health	3.53	0.50	0.70
2	Lifestyle	3.54	0.64	0.80
3	Consumption Intension	3.16	0.62	0.79
4	Consumption Habit	3.29	0.60	0.78
5	Attitude	3.45	0.45	0.67
6	Product Attribution	3.60	0.48	0.96
7	Price	3.85	1.28	1.12
8	Distribution	3.98	0.96	0.98
9	Advertising	3.85	1.48	1.22

Table 8

*Description of the Characteristics of Segment 1 and Providing Guidelines for the Characteristics of This Segment***Factors / Proposed strategy for manufacture and marketing department****Concern about health**

The customers of this segment are strongly interested in their health status. Therefore, the quality of products and suitable organic diet should be highlighted in advertising.

Life style

The customers of this segment assigned a high weight to life style. Therefore, interpersonal communication and increasing sense of belonging should be highlighted in advertising in order to increase the buying frequency and also amount of purchases.

Intent to buy and use

The customers of this segment assigned a high weight to purchase and consumption decisions. They try to obtain herbal medicines and they recommend them to their friends. They use herbal medicines in order to preventive, beauty and treatment advantages. They are loyal customers. Therefore, all of them persuade others to consume these products as a marketer of the products because in addition to their purchasing frequency they positively advertise the products. Implement incentive schemes for loyal customer is recommended. They pay attention to receiving consultations before making purchase decisions. Therefore, the consultation department should be strengthened on the one hand and more time should be spent for those who visit this department on the other hand. In identifying the intention to buy and use the following marketing concept will be useful: -Attention to the model of psychological value and lifestyle (vals). This model identifies consumers according to the characteristic of consumer interest in two dimensions. - Economic and material dimension and psychology dimension. Consumer are sensitive to the cost believe that benefit is in terms of the economy and discount received and consumer who are concerned about their health and have a positive attitude towards these product are looking at the benefits of the psychological and physical aspect. These considerations should be used through marketing department.

Attitude

The consumers pay much attention to the trust made by the consultants. They also highlight the role of instruction and put much value on the presence of consultants and physicians in herbal pharmacies. Consumers' satisfaction matters, as well.

Product characteristics

They believe that product specifications are important and they know the observation of hygienic standards as a factor directing their purchasing decisions. In their view, acquiring required standards by production department and introducing these standards to the consumers of the products is an important factor motivating them to purchase the products and making them be satisfied with the products. They believe that producers should more think about the importance of packing and the labels of products. Product label and the product instruction introducing the content of packs and the advantages of products can motivate these customers. Producers and marketers should further work on product profile proportional to the expectations of these customers. They believe that the appearance of herbal medicines is not acceptable. However, marketers remind them, that in the process of producing herbal plants no color or additive is added to them in order to increase the attractiveness of their appearance. The flavor of herbal medicines was focused, demanding producers to consider this point in organic production on behalf of the customers. Syrup, pill, Powder, and drop derivations of medicines should be more diversified. The consumers of this segment prefer local products. However, the local production rate is low. Therefore, it is necessary to design a plan to increase the production rate and to build and exploit herbal medicine factories inside Iran.

Price

The customers of this segment assigned a high weight to the price. Therefore, producers should bear in their mind that they should provide appropriate prices. However, when there are high prices, they should explain the causes of such prices to the customers. In addition, similar to chemical medicines, herbal medicines should be covered by insurance companies, which lead to reducing consumers' costs, especially when they are used for treatment purposes, not merely for beauty purposes.

Distribution

Available distribution channels should be re-assessed, it is necessary to increase the number of herbal medicine shops across the city. These customers give an importance to the physical structure of pharmacies offering herbal medicines. Therefore, those pharmacies which have targeted such customers should pay more attention to the renovation of the physical space of their pharmacies in order to attract the customers.

Advertisement

Consumers usually rely on their previous conceptions and experiences in shopping; this requires an advertisement done for the purpose of informing the consumers regarding the newly-produced herbal medicines. Advertisements can involve the customers' minds, and increase their capacity and information in the purchase process. Recognition of abstract features of human beings can play an important role in advertising. According to 3M¹ model, women were found to be in favor of unity and peace, and such personalities can make the advertisement more successful. However, men have the potential of being separate and individualized focusing on selfishness and self-happiness (Braund & Kumar, 2003), which are affected by advertisement. Advertisement should be stimulating enough to create an atmosphere in which the customers' mentalities are affected by that (Kotler, 2013). Moreover, advertising tools can simultaneously be used in order to make the advertisement of herbal medicines more successful.

¹ Meta-Theoretical Model of Motivation (3 M)

Table 9

Description of the Characteristics of Segment 2 and Providing Guidelines for the Characteristics of This Segment

Factors / Proposed strategy for manufacture and marketing department

Concern about health

This cluster consists of consumer who have negative attitude toward herbaceous medicines. In compare to other segments, the consumer in this segment has low scores for health orientation, perceived value and also perceived effectiveness. Therefore, informational promotional campaigns and incentives such as free samples, price reduction and free health consulting may motivate the consumers to try herbaceous medicines. These customers assigned a very low weight to the components of health. They are disinterested in their health status. Consulting along with provide incentives can change their attitude about this products and maintaining their health.

Lifestyle

This study indicate that perceived value, health orientation, perceived effectiveness with their aspects such as sense of belonging, sense of accomplishment, sense of health, believe of herbaceous medicines in offensive harmless and curative and so on are construct which guide consumer preference that can be used in promotional campaigns directed at any of the herbaceous medicines market segment.

Purchase and consumption intention

People in this section focused on ineffectiveness or less impact of herbal medicine, suggesting combination of herbal products together and production of herbal medicine with a faster and more lasting effect. They refer to hygiene and standards, and believe that the full concept of herbal medicine due to soil and seed and fertilizer pollution does not really matter. it is recommended to The production section to receive ideas from plant and agricultural experts for the improvement and reform of soil, fertilizers and seeds, which is a product of absolute organic production and health, and on the other hand, by further mechanizing the process of conversion and production to realize Most quality standards of these products. The concept of motivation in avoiding the risk (consciously, physically, psychologically hazardous) can stimulate the intent of buying and consuming. Marketing advertising should be consistent with reducing risk. The concept of purchasing a herbal product without any subsequent complications, without additives and chemicals, is a reduction of the physical hazard of motivational concepts for buying intent.

Attitude

The member of this segment has a negative attitude about these products. Marketing department 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 (Marangoz & Paksoy, 2014).

Product characteristics, price and distribution

In the probable purchase decision, they should work on their attitude and concern for health or their lifestyle. As long as they are indifferent to health, it's natural that they do not think at all about the features of the product, price, and distribution.

Advertising

Advertising the health and safety of herbal medicines in which no chemical substance is used can attract the customers with negative attitude. Therefore, the concept of natural medicine should be explained via arranging public information campaigns. Clarifying the differences between herbal and chemical medicines seems beneficial in reducing consumers' confusion. The public sector 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. The customers of this segment distrust herbal medicines. Therefore, marketers should provide them with real references, 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.

Table 10

Description of the Characteristics of Segment 3 and Providing Guidelines for the Characteristics of This Segment

Factors / Proposed strategy for manufacture and marketing department
<p>Concern about health, attitude, product characteristic, distribution and advertising The customers of this segment assigned more than average weight to these factors, so similar strategies with segment 1 are recommended.</p> <p>Purchase and consumption intension The customers of this segment assigned more than average weight to this factor. Strategies similar in segment 2 are suggested.</p> <p>Lifestyle The customers of this segment assigned the maximum weight to life style. Measuring the dominant values of a person and the value-value approach using the list of value (LOV) model or questionnaire can be done. The model of the dominant values in the two general categories of exterior with subscales (sense of belonging, respectfulness, security and pleasure and pleasure), and individual value and internal nature with subcultures (self-perfection, arousal, sense of progress and self-esteem) he does. Identifying consumer dominant values will be effective in identifying lifestyles and consumption patterns of consumers (Stremersch, 2008). The consumer, with internal dimensions, cares about the quality of the product he is buying, avoids additives and does not have side effects, is traditionalist and nationalistic, and believes in the cultural indicators of domestic products, and that he can rely on domestic herbal medicines And on the other hand, it has contributed positively to the market and the profitability of this market. While the consumer with the external dimension is more likely to be consuming the day and avoiding natural products and giving them a greater sense of pleasure than life and entertainment, for example, the treatment of chemical drugs with a rapid effect, for the purposes of prevention and the beauty of surgeries Choose beauty.</p>

Table 11

Description of the Characteristics of Segment 4 and Providing Guidelines the Characteristics of This Segment

Factors /Proposed strategy for manufacture and marketing department
<p>Concern about health, life style, attitude, product characteristics and distribution The customers of this segment assigned more than average weight to these factors, so similar strategies with segment 1 are recommended.</p> <p>Purchase and consumption intension and advertising These two factors were assigned less value. Strategies in segment 2 are suggested.</p> <p>Price The customers of this segment assigned the maximum weight to price. Media-based advertising and displaying the procedures of processing herbal medicines, which implies the difficulty of work, the quality of work, and the health of medicines, can change these customers' mind from the value of money to the advantages of the medicines. The production section is strongly recommended to benefit from mechanization in the process of planting, maintenance, and harvesting herbal medicines. Attentions should be paid to increasing the mechanism of transforming the herbal plant to herbal medicines, leading to increase in their production and reduction in costs within the local market. Similar strategies of segment 1 are recommended.</p>

Section 1 is the most profitable section whose requirements can be considered by the manufacturing and market department. Section 2 is in contrast with section 1. Based on the theoretical foundations of non-profit markets, it might be better to have the least cost and planning to attract members of this section. In section 3 and 4, many of the eight categories were assigned highly-moderate weight, which are similar to section 1. Investigation of the average of the factors in these

sections confirms such similarity. It appears that based on the proximity of the features of sections 1, 3, and 4, similar strategies can be proposed in closely-related cases regarding the fact that in section 3, more emphasis was placed on life style, while section 4 emphasized price. Large members of these three sections (i.e., 1, 3, & 4) can be considered as the target market for manufacture and producers of herbal medicines.

Table 12

The Number of Members in Each Section and the Characteristics of Each Section from the Demographic Dimension

Segment/ Demographic Dimension			
Segment 1 with 236 members	Segment 2 with 55 members	Segment 3 with 94 members	Segment 4 with 75 members
-56.5% men-42% between 26-35 age-40% based on education are master and higher than master-38% employee	60% men-48% between 26-35 age-54% based on education are lesser than bachelor-40% employee	58% men-38% between 26-35 age-50% based on education are master-41% employee	57% men-41% between 26-35 age-36% based on education are bachelor-57% have a job in market

Descriptive results

The discretionary results in demographic dimension of the surveys indicate that consumers were more likely to be between the ages of 26 and 35 and 18 to 25, so they could be considered as target markets. To succeed in this target market, it should be investigated and its needs and interests should be considered, as well. Investigations are done concerning the potential diseases in these ages and the introduction of appropriate therapeutic options for these diseases. This age range is more likely to be associated with neurological and digestive problems caused by stress, labor, and sleep, and are, to a lesser extent, affected by Alzheimer’s, arthritis and arthritis, osteoporosis, blood pressure, diabetes, and respiratory problems, resulting in the recommendation of production and market sectors to produce, advertise, and supply appropriate drugs. Surveys in the field of beauty and the production and introduction

of appropriate drugs are done to meet the beauty concerns of this age range. For example, people in this age range worry about the health of the skin, hair, nails and fitness, which demand introducing appropriate remedies for eliminating or reducing these concerns. Anti-wrinkle creams and lotions are likely to be needed. In the field of prevention of disease and aging, as well as the prevention of drugs, the proposed drugs should reinforce the therapeutic aspect, for example, special medications for strengthening the immune system or preventing the loss of hereditary hair or considering that the target market includes the busiest individuals who spend a lot of days working in organizations and organizations. This requires the production and the market sectors, with their perceptions of their engagement, to formulate the drug according to their conditions. It seems that herbal pills and capsules are easier to eat than snacks or syrups. The market

segment focuses on the packaging, size, and packaging of the packages, according to the trend and interest of the target age range. Fashionable packages and small ones are more preferable than a large package with a classic design for this age range. Advertisement planning should also be considered. The majority of people in this age range are university students, employees of organizations, sports club enthusiasts, and activists and visitors in cultural settings. Moreover, gyms and sports stadiums, or an adjacent proximity to a large luxury shopping mall, the retirement center, school, or nursing home or if the advertising teaser is scheduled, before appealing serials, the advertising schedule for the audience of this age range is appropriate to be done at night. However, if the elderly were the target market, it is more appropriate time in the morning. These people do not have much time to watch television, being not a good medium for communication and advertising, since most people in the spectrum are internet-driven and interested in virtual networks, and these networks are usually available to them, which makes media virtualization to be more suitable for information, persuasion, and reminder.

Demographic studies also show that most consumers have a bachelor degree or higher for whom the detailed and complete explanation of the benefits and properties of these drugs, the method of preparation, the description of its mechanism of influence on the body, possible complications and other information are important. Educated people try to get the drug in a more valid way and they care about the advice and prescription of the doctor. The structure of the pharmacies, advertising within the pharmacies, and the appointment of a counseling physician is very important for them, which needs to be well attended.

Demographic studies suggest that most of the consumers are employees. The ease of using medication and drug design in the form of tablets and capsules for these people will be more practical. The survey found that

most consumers had a moderate upward income level, which would be of interest to the market and production sector, having great importance to the quality, standards, and packaging of the product.

Findings reveal that the gender roles are close to each other. The advertising section will provide them with special promotions. To maintain the men's motivation, it would be appropriate to use male sports and cinematic superstars whose favorable opinion and tendency can be appropriately used in advertisements, or to design the advertisement with an emphasis on the separation-oriented features of men and the bonding-preference of women by the marketing sector.

DISCUSSION

The present research identified the effective factors on decision to purchase herbal medicines, segmentation of customers based on the identified categories, and determining the customers' profile of each segment. Similar research has been done in this regard regardless of specifications in the issue of herbal medicines and the role of marketing in development of this market. For example, [Ahmadi, et al., \(2010\)](#) conducted a study entitled "the segmentation of medicine market based on neural network approach" using self-organizing map. They identified 6 different segments of customers in drug market by administration of a questionnaire based on Kotler's pattern in market segmentation. [Hoseini and ZiaeiBide \(2012\)](#) carried out a study entitled "the segmentation and determination of the profile of green consumers using self-organizing maps". The study was an attempt to segment green market based on demographic, behavioral, and psychological characteristics and to assess the relationship between each variable and the green consumers' behaviors. As to the results, four segments were determined and named as extreme green, potential green, dark egoistic and extreme darks. Findings revealed that demographic variables, including age, sex and income, and psychological and behav-

ioral variables, including individual values, religious fanaticism and environmental attitude, and knowledge played a key role in predicting green consumers' behavior. Williams and Heller (2007) studied the segmentation of green consumers based on their environmental attitude and knowledge. They divided green consumer's market to three segments including non-aligned, active greens, and undefined markets. Literature shows that, up to the present, no research appears to have been done in herbal medicines. The results of this study indicated that herbal medicine market can be divided and there are many interested customers. In fact, each segment referred to the importance of categories, sensitivities, and shortcomings about these products. By identifying the effective factors on purchase and consumption decision in herbal medicine, the shortcoming and weaknesses in the field of the market and the production of this product were discovered. Strategies to eliminate or reduce these shortcomings were presented, as well. Strategies such as list of value in pattern and theories of lifestyle can lead to creating motivation for using herbal medicines. According to perceptual and motivation patterns, strategies can help how to make purchasing and consumption intent. Also, it was illustrated that how the strategies of advertising programs should be formulated based on the profile of individual attitude, personality, concern about health, and hygiene. Finally, it was highlighted that what aspects of product features were important for customers, which is emphasized by the production and market segmentation. Consumers preferred local product compared to Chinese and Indian imported herbal medicines. This demands producers and entrepreneurs to present ideas for increasing the production of medicinal plants, presenting ideas to increase types of medicinal plants and to increase the conversion rate of herb to herbal medicine (Jasemi et al., 2016). Consumers were concerned with hygiene standards and production quality. Presenting ideas to mechanize more phases or

process of production, to enhance the quality of herbal medicine (pure nature) by purifying the soil from the pollutant is recommended. Consumers believed that herbal medicines were expensive, which needs presenting ideas for increasing production and decreasing the cost, leading to lower price. They also focused on ineffectiveness or less impact of herbal medicine, suggesting combination of herbal products together and production of herbal medicine with a faster and more lasting effect. Consumers also pointed out that the flavor of herbal medicine (syrup and drops) was very bad, which recommends entrepreneurs and manufacturers to improve the flavor of the drug or make it tasteless. It should also be noted that maintaining loyal customers is very important, which requires the marketing departments to provide services for the sake of their satisfaction, such as loyalty card. Entrepreneurs, manufacturing, and market section should be aware of the above-mentioned issues and try to develop and implement the best strategies to create values for customer and simultaneously for this market and industry (i.e., herbal medicines). The present research was done to obtain accurate data by unstructured interviewing. Data were analyzed based on K-Mean approach, which is an appropriate tool in the field of clustering based on theoretical foundations. Moreover, validity assumptions were met. However, concerning the limitations, it seems that the use of panel group in the qualitative section as well as the combined algorithm in the quantitative section can increase the validity of the research. It is also recommended that this project can be performed with combination algorithms. On the other hand, the result of this study identified 8 categories as effective factors in the segmentation, explaining 63/6 percent of the variability of the variables. It is suggested that other categories, which might affect the purchase and consumption decision of herbal medicine (a relative 40 percent role), should be identified.

ACKNOWLEDGEMENTS

The authors would like to thank the members for their participation in interviews and filling the questionnaires.

REFERENCES

- Ahmadi, P., Azar, A., & Samsami, F. (2010). Market segmentation drug neural network approach. *Journal of Business Management*, 2(6), 1-20.
- Ayazi, S.M.H. (2017). *The Ministry of Health supports the manufacturers of herbal medicines and herbal medicines*. <http://tasnim.ai/1658994/19/2/2017>.
- Braund, K., & Kumar, C. (2003). *Marketing Management*. Sage publication INC, 2nd Edition, USA.
- Chen, J., & Burgers, W. P. (2017). Winning the China vitamin war by building a strong brand. *International Journal of Pharmaceutical and Healthcare Marketing*, 1(1), 79-95.
- Diaz, N., & Hoefkens, C. (2009). Needs based segmentation: principles and practice, *International Journal of Market Research*, 44(12), 405-422.
- Gheybi, F. (2018). The economic value of herbal plant in Iran. Retrieved from <http://TasnimNews.com/Fa/News/10/6/2018>
- Hajimirrahimi, S.D. (2017). The effect of educational, expansions and research factors on the development of medicinal plants in Markazi Province of Iran. *International Journal of Agricultural Management and Development*, 7(2), 223-236.
- Hosseini, S.Y., & ZiaeeBideh, A.R. (2013). Segmentation and profiles of green using self-organizing maps ten. *Management Research in Iran*, 2, (17), 39-26.
- Iran Ministry of Health and Medical Education Support from the manufacturers of medicinal plants and Herbal medicians. (2018). Retrieved from <http://snn.ir002ng7,667623/>
- Jamshidi, A.H. (2016). Revwe the amount of herbal medicinal produced in Iran. *Record in Third National Exhibition of Herbal Medicine and traditional Medicine in Iran, Technical and Knowledge Based Publication*, Tehran.
- Jasemi, M., Moradnezhad, H., & Salavarz, M. (2016). Entrepreneurial strategies of enhancing competitive advantage of medicinal herbs in Ilam Province, Iran. *International Journal of Agricultural Management and Development*, 6(4), 459-466.
- Kheyri, H. (2018). *Drug capita in Iran is more than Global Standard*. Retrieved from <http://Irna.ir/Fa/News/83032795/13/9/2018>.
- Kotler, Ph., & Armstrong, G. (2013). *Principles of Marketing*. Translated by Mohammad Reza Saleh Ardestani and Abbas Sadi, Tehran, Ilar.
- Marangoz, M., & Paksoy, M. (2014). Modeling Attitude towards organic foods: A research on adolescents. *Business Management Dynamics*, 3(7), 40-49.
- Momeni, M. (2011). *Data Clustering*. Tehran, Moalef Publication, Iran.
- Roediger, M, Ulrich, H. (2015). How are organic food prices affecting consumer behavior? *Food Quality and Preference Journal*, 43(6), 10-20.
- Secaran, O. (2011). *Research methodology in management*. Translated by Mahmood Shirazi & Mohamad Saeb, 9th Edition, Tehran, Roshd Publication.
- Sevil, Z. (2016). A theoretical approach to concept of green marketing. *Interdisciplinary Journal of Contemporary Research in Business*, 3(2), 96-105
- Stremersch, S. (2008). Health and marketing: The emergence of a new field of research. *International Journal of Research in Marketing*, 25(4), 229-233.
- Williams, S. S., & Heller, A. (2007). Patient activation among Medicare beneficiaries: Segmentation to promote informed health care decision making. *International Journal of Pharmaceutical and Healthcare Marketing*, 1(3), 199-213.
- World Health Organization. (2018). infrastructure and guidelines on producing herbal medicines. available at: <http://>

apps,who.int/medicinedocs/document
ts/s 1996 en/s 21032 en.pdf

Yavari, A. (2018). Iran the golden gardens of medicinal plants and the share of Iran from global trade to zero. *Retrieved from <http://tasnimnews.com/11/6/2018>*.

Yosini, D. (2012). Market segmentation for organic products in Bandung Waste Java Indonesia. *Research Journal of Resent Sciences, 1(3)*, 48-56.

How to cite this article:

Sherej Sharifi, A., Bazaaee, G., & Heydari, S.A. (2019). Targeted marketing in herbal medicine; Application for Grounded Theory and K- Mean Algorithm. *International Journal of Agricultural Management and Development, 9(4)*, 331-346.

URL: http://ijamad.iurasht.ac.ir/article_665864_10bc0b37a885b9d966eb6afc4d40426d.pdf

