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### Factors affecting the Market Development of Aquatics and Products Processed from them (Case Study: Sarpolzahab Township)

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The main purpose of the present study was to investigate effective factors of the market development of aquatics and products processed from them. The present research was applied research. Also, it was quantity research and in terms of the method of collecting data was a survey research. The Statistical population of this study consisted of experts of Agricultural Jihad Organization, experts of Agricultural Bank, fish growers and fish sellers of Sarpolzahab township which all of them were studied by using census method (N=221). The main data collection instrument was a researcher made questionnaire. The face and content validity has been confirmed by a panel of experts consisting of faculty member of agricultural extension at Islamic Azad University of Ilam Branch. Also the Reliability has been determined by Using the Coronbach's alpha formula (0.94). For data analysis, descriptive and inferential statistics were used. The results of the exploratory factor analysis of research indicated that technical and professional, political, educational – administrative, production, supportive, marketing, export, type of product and geographical factors have been able to explain in total 73.087% of total variance of development of the market of aquatics and products processed from them.

Keywords: Aquatic, Market development, Marine **Products** 

#### 1. Introduction

Today, medical recommendations appropriate packaging, has been increased consumption of fishery products. However, the rate of aquatics consumption has been reported up to 10.2 kg at the end of 2013 in Iran. While, capita consumption of aquatic products in the world is about 28 kg at the end of 2013 (Statistical Yearbook of Fisheries, 2013). It seems that the per capita aquatic consumption in Iran reaches to 30% world standards of consumption. The average consumption of aquatics in food baskets of Families in the city of Sarpolzohab has been 7.8 kg, which is lower than the overall average aquatics consumption in the country (Statistical Yearbook of Fisheries, 2013). The main reasons for this difference of consumption can be lack of special attention to aquatics and their market development, anonymity of their diverse products, lack of proper planning for notification, advertising

and programs for the development of the aquatic market (Adeli & Shabanpour, 2007). Special attention has been paid to the fishing and marketing of aquatic products as a protein supplier of human needs since several decades ago (Aghili et al., 2010). Although the history of using marine protein in Iran has been affected of Social, economical, ethnical and geographical factors, the status and importance of aquatics consumption is not considered in the Iranian's food program as important issue (Heidarnezadian, 2014). Based on the views of (Ghorbani et al., 2010) there are two main factors influencing the use of marine proteins: a) technical – structural factors such as fisheries management, resources, research and methods of fishing and processing, b) consumer and his behavior type toward marine products, marketing and sales of aquatics and processed products from it. In this study we have tried to examine the factors affecting the

market development of aquatic from the perspective of the consumer market in the city of Sarpolzohab. A lot of research is done about aquatics market. In the research of (Heidarnezadian, 2014) been reported physical- farm factors, farm management, economics, education and training factors are effective in the market development of aquaculture and processed products from them. Farahmand et al (2012) in their research have concluded that good advertising, desire packaging, civic responsibility, creating new markets and appropriate e-commerce are the most important factors affecting market development of saffron.

In the Research of (Adeli & Shabanpour, 2007) been reported that the consumers of packed aquatics the register of food values and the increase of ability for time of storage of pack, clearing the time of production, health's code and having valuable mark an information about the use of aquatics as a result reducing the sea resources and operation of them, towards the raising aquatics and eventually trout was selected. Rosta et al (2004) believe that socio- cultural factors (culture, social class), psychological individualfactors (motivation, personality, self-concept, etc.), situational factors (time and place) and packaging are effective in the consumer's decision toward buying aquatics. Bolorian Tehrani (2011) noted that appropriate packaging, design, shape and coloring of the product, can induce the decision to buying the consumer in the consumer.

Noori Zamanabadi (2007) showed that aquatics need to more packing process due to higher large amount exploitation corruption, diversification of production and consumption. Aidani (2009) believes that it is necessary to put the information on the packaging aquatic, because, it can attract consumer confidence. Mir Nezami (2007) believes that convenient packaging of aquatics can reduce waste and facilitate the transport of goods and attract consumer confidence. Aghili et al(2010) indicated that reasonable price of aquatic, confidence to the freshness of aquatics, health consideration, having enough time are effective factors in the desire to aquatics buy. The results Yousefi and Shariati (2009), showed that A significant proportion of households in Mashhad township do not consume aquatics. Changes in household per capita consumption of fish depends on the consumer awareness, having the consumption facilities, consumption habits, evaluate the benefits of consumption, social reward of consumption and normative pressure of consumption. Dehdashti & Sayedzadeh (2006) in their research have indicated that characteristics such as product, price, distribution and promotion activities are effective on the market development of aquatics. Soghotifar (2009) in his research has indicated that the packaging can be

effective in maintaining of aquatics quality and how to sell them. Mokhtari et al (2005) in their research have indicated that in aquaculture should be used to technologies and skills appropriate to its position.

#### Research objective:

The main objective of the present study was to investigate effective factors on market development of aquatics and products proceed from them in Sarpolzahab City during the time period from 2013 to 2014. Specific objectives of this research are included:

- **1.** Investigating personal characteristics of Respondents.
- **2.** Ranking Component of Market development of aquatics and products proceed from them.

#### 2. Materials and methods

The present research was applied type based on the goal, based on the nature it was quantity research and in terms of the method of collecting data was a survey research. The statistical population of this study consisted of experts of Jihad agricultural organization, experts of agricultural bank, fish growers and fish sellers of Sarpolzahab township which all of them were studied by using census method (N=221). Table 1, shows the population size. The main data collection instrument was a researcher made questionnaire which consists of 3 main parts (Personal characteristics, questions related to factors affecting the development of the market of aquatics and questions related to development of the market of aquatics). The face and content validity has been confirmed by a panel of experts consisting of faculty member of agricultural extension at Islamic Azad University of Ilam branch. Also the reliability has been determined by using the Coronbach alpha formula (0.94). For data analysis, descriptive statistics and inferential statistics were used.

Table 1. The population size table

Statistical Population of Research	Population Size
Experts of Jihad agricultural	95
organization	
experts of agricultural Bank	87
Fish growers and proceed	12
products	
Fish sellers and proceed products	27

#### 3. Results and discussion:

#### 3.1 Descriptive Statistics:

Table 2 shows summarizes the demographic profile and descriptive statistics of respondents. The majority of respondents were male (75.1%). 38% of the statistical sample have had aged between 26-35 years old. 43.9 percent have had a bachelor's degree. 41.1% of respondents were experts of Jihad agricultural organization.

Table 2. Summarizes Demographic Profile and Descriptive Statistics of Respondents.

Variable	Level of changes	Frequency	Percent	Cumulative Frequency
	Male	166	75.1	-
Gender	Female	55	24.9	
	15-25	30	13.6	13.6
	26-35	84	38	51.6
Age	36-45	63	28.6	80.2
-	46-55	28	13.8	94
	Up to 55	15	6	100
	Under Diploma	14	6.3	
	Diploma	32	14.5	
	Upper Diploma	50	22.6	
Educational level	BS	97	43.9	
	Master degree	25	11.3	
	PhD	3	1.4	
Job Status of Respondents	Experts of Jihad agricultural organization	95	41.1	
	experts of agricultural Bank	87	39.3	
	Fish growers and proceed products	12	5	
	Fish sellers and proceed products	27	12.2	

Table 3. Prioritizing factors affecting the aquaculture market development from the perspective respondents

Variables         Mean         SD         CV         Rank           Quality and freshness of fish and processed products         3.9         1.0         0.256         1           Suitable Packaging for product maintenance for longer periods of time         3.92         1.02         0.26         2           Professional ethics education and Market management method for aquacultures         3.75         0.98         0.261         3           The Existence of Experts and Consultant in the field of aquaculture.         3.83         1.04         0.272         4           Creating new ways to reduce cost of product         3.79         1.10         0.290         6           Overcome technological and technical limitations         3.61         1.05         0.291         7           The existence of proper grounds of export For the sale products of aquaculture         3.61         1.05         0.292         8           Farms access to suitable infrastructure facilities such as gas, electricity, water, road,         3.63         1.06         0.292         8           Farms access to suitable infrastructure facilities uch as gas, electricity, water, road,         3.63         1.06         0.292         10           The existence of a valid label in the case of the production time, hygienic code and company         3.83         1.12         0.301	rable 3. Filoritizing factors affecting the aquaculture market development from the			_	
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Creating new ways to reduce cost of product Provide adequate facilities for the development of fish farms 3.78   1.08   0.286   5   3.79   1.10   0.290   6   3.79   1.10   0.290   6   3.77   1.10   0.291   7   3.77   1.10   0.292   8   3.77   1.10   0.292   8   3.77   1.10   0.292   8   3.78   1.06   0.292   9   3.77   1.10   0.292   10   3.78   1.06   0.292   9   3.79   1.10   0.292   10   3.70   1.10   0.292   10   3.70   1.10   0.292   10   3.70   1.10   0.292   10   3.70   1.10   0.292   10   3.71   1.10   0.292   10   3.72   1.10   0.292   10   3.73   1.10   0.292   10   3.74   1.10   0.292   10   3.75   1.11   0.301   11   3.76   1.13   0.301   11   3.76   1.13   0.301   11   3.77   1.10   0.304   12   3.78   1.10   0.304   12   3.79   1.10   0.304   12   3.70   1.10   0.304   13   3.70   1.11   0.304   13   3.71   1.13   0.305   15   3.75   1.14   0.304   14   3.75   1.14   0.304   14   3.75   1.14   0.304   14   3.75   1.15   0.308   16   3.75   1.10   0.308   17   3.75   1.10   0.308   17   3.75   1.10   0.308   17   3.75   1.10   0.308   17   3.75   1.10   0.309   18   3.75   1.10   0.309   18   3.75   1.10   0.309   19   3.75		3.75	0.98	0.261	
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Effective communication between fishermen and aquaculture people 3.47 1.14 0.329 28 The existence of suitable ground for Aquatic transport and processed products 3.62 1.19 0.329 29	Development of white meat consumption and Aquatics	3.74	1.22	0.326	26
The existence of suitable ground for Aquatic transport and processed products 3.62 1.19 0.329 29	Administrative and legal support of fish growers	3.65	1.20	0.329	27
· · · · · · · · · · · · · · · · · · ·	Effective communication between fishermen and aquaculture people	3.47	1.14	0.329	28
	The existence of suitable ground for Aquatic transport and processed products	3.62	1.19	0.329	
	Training and the promotion of aquaculture	3.63	1.20		

Knowing the types and characteristics of each fish by consumers	3.62	1.20	0.331	31
The existence of insurance coverage for manufacturers	3.63	1.21	0.333	32
The existence of Proper monitoring system	3.45	1.16	0.336	33
The possibility of Aquaculture export and their processed products	3.57	1.20	0.336	34
Cheap access to packing factories	3.54	1.22	0.345	35
New products processed from the aquatics	3.57	1.23	0.345	36
Public informing about the benefits of fish and aquatic	3.62	1.25	0.345	37
The existence of traditional markets for fish sellers	3.4	1.18	0.347	38
Use of the techniques and new marketing methods	3.42	1.19	0.348	39
The existence of active cooperatives and organizations in the region for the sale of Aquatics	3.36	1.17	0.348	40
The availability of appropriate fisheries agencies for selling of aquatics	3.62	1.28	0.354	41
Conducting Festivals and competitions about the benefits of Aquatics	3.49	1.24	0.355	42
The supply of fish and aquatic in the Specialized stores of protein products	3.53	1.26	0.357	43
Holding training courses of aquatics cook to cultural development of using Aquatics	3.44	1.23	0.358	44
purchasing power and income of Consumers	3.63	1.30	0.358	45
Correct and consciously buy of inputs by farmers	3.34	1.20	0.359	46
Control training and monitoring of aquatic diseases	3.51	1.26	0.359	47
Technical knowledge training of farm management to the aquatic farmers	3.44	1.24	0.360	48
Awareness of the fluctuations supply and demand in the market	3.43	1.24	0.362	49
Creating Tourism zones and specialized restaurants In the vicinity of aquatic farms	3.44	1.26	0.366	50
The supply types of fish to the market to form of fillet, bone or boneless	3.5	1.28	0.366	51
Establishment of supply and sale Exhibitions of fish and Processed products	3.53	1.30	0.368	52
Water and waste management of aquatic farms	3.28	1.21	0.369	53
Considering to the views of retailers and trades people regarding aquatic market	3.23	1.24	0.384	54
Market understanding and its dynamics	3.29	1.23	0.374	55

In this study the coefficient of variation is used to prioritize factors affecting the development of the aquaculture market. In this part of research, was used 55 questions with answers, 5-choice Liker scale format (very little, little, average, much, very much). Then descriptive statistics such as mean, standard deviation, coefficient of variation has been calculated for each of the questions. Table 3 shows the result of prioritize factors affecting the development of the aquaculture market.

Results table 3 shows that variables such as quality and freshness of fish and processed products, Suitable packaging for product maintenance for longer periods of time and professional ethics education and market management method for aquacultures have the highest priority in the development of the aquaculture market from the standpoint of respondents.

#### 3.2 Inferential statistics:

Factor analysis of component of development of the market of aquatics and products processed from them:

To investigate the component of development of the market of aquatics and products processed from them is used of exploratory factor analysis using statistical software SPSS. In this study, the purposes of the application of factor analysis is to development of the market of aquatics from the perspective of the respondents and determine the

amount of variance explained by each of the variables in the form of classified factors. In this study is done the following step:

Determining the suitability of data:

In this study, according to the KMO<sup>1</sup> obtained at the appropriate level, it can be said that the data have been suitable for factor analysis (Table 4).

Table 4. KMO and Bartlett amount of data collected

KMO	Bartlett Test	p- value
0.877	13319/08	0.000

Source: Research Finding

#### Determine the number of factors

An extracted factor along with eigenvalues and cumulative percent of variance is listed in Table 5. Based on the results of Tables 5, factors related to the products have highest eigenvalue than other factors. The eigenvalue of this factor (9.32) indicates that the factor explained about 16.96% total of variance. Generally these 9 factors have been able to explain 73.08% of the variance of development of the market of aquatics factors.

<sup>1 -</sup> Kaiser Meyer Olkin

Table 5. Extracted factors along with eigenvalues and the percentage of total variance

	8	1 0	
Factors	eigenvalues	percentage of	The cumulative
		total variance	percentage of variance
Factors related to the products	9.32	16.96	16.96
Technical and professional factors	6.57	11.95	28.91
Political factors	5.36	9.75	38.66
Educational – administrative factors	4.21	7.65	46.32
Production factors	3.61	6.57	52.89
Supportive factors	3.51	6.39	59.29
Market factors	3.17	5.77	65.06
Export factors	2.23	4.06	69.12
Cultural factors	2.13	3.95	73.08

Table 6. An extracted factor along with eigenvalues, percent variance and the cumulative percent of variance

Factor Name	Items	Loading factor
Factors related to the	Suitable packaging for product maintenance for longer periods of time	0.79
products	Quality and freshness of fish and processed products	0.74
	The supply of fish and aquatic in the specialized stores of protein products	0.67
	The existence of a valid label in the case of the production time, hygienic code	0.67
	and company name	
	The availability of appropriate fisheries agencies for selling of aquatics	0.66
	Advertising about the benefits of fish consumption in the communications media	0.65
	The supply types of fish to the market to form of fillet, bone or boneless	0.65
	Knowing the types and characteristics of each fish by consumers	0.63
	Public informing about the benefits of fish and aquatic	0.59
	The existence of information on how to cook the fish or shrimp on packaging	0.56
	The existence of suitable ground for aquatic transport and processed products	0.55
	Correct and consciously buy of inputs by farmers	0.52
	Cheap access to packing factories	0.51
	Overcome technological and technical limitations	0.51
	Market understanding and its dynamics	0.78
	Training on correct maintenance methods and storage of aquaculture products	0.69
Technical and	Technical knowledge training of farm management to the aquatic farmers	0.68
Professional Factors	Considering to the views of retailers and trades people regarding aquatic market	0.64
	Farms access to suitable infrastructure facilities such as gas, electricity, water,	0.61
	road,	0.01
	Water and waste management of aquatic farms	0.59
	Effective communication between fishermen and aquaculture people	0.55
	The existence of experts and consultant In the field of aquaculture	0.51
	Provide adequate facilities for the development of fish farms	0.50
	Granting low-interest loans with the appropriate payback period For aquaculture	0.79
Political Factors	manufacturers	0.77
1 Official 1 actors	Reduce the taxes levied for sellers of aquaculture	0.68
	The existence of insurance coverage for manufacturers	0.63
	Use of the techniques and new marketing methods	0.58
	Professional ethics education and market management method for aquacultures	0.56
Educational	Fish feeding management by farmers	0.30
administrative	Direct supply of fish and aquaculture at an affordable price than the market	0.77
Factors	Training sales techniques and the supply of fish to the fish retailers	0.72
Production Factors	New products processed from the aquatics	0.50
Production ractors	Control training and monitoring of aquatic diseases	0.58
		0.58
	The existence of proper monitoring system Facilitate the administrative and legal processes to establish fish farms or the	0.55
	fishing permits	0.55
Commandian France		0.77
Supportive Factors	The possibility of aquaculture export and their processed products	0.77
	The existence of information about the nutritional value of fish on the packaging	0.61
	Holding training courses of aquatics cook to cultural development of using aquatics	0.55
	The existence of traditional markets for fish sellers	0.51
Market Factors	Creating tourism zones and specialized restaurants In the vicinity of aquatic	0.67
	farms	

Existence of appropriate distribution network of aquaculture products in the area 0.70	Export Factors	The existence of proper grounds of export For the sale products of aquaculture	0.61
	Export Factors		
	Geographical	The impact of distance and geographical conditions in the attitudes of people in	0.70

Results of factor analysis showed that factor related to the producers is allocated 16.96% of the variance. This factor with eigenvalues (9.32) has been first factor of the factor analysis of development of the market of aquatics.

Factor 2 was named technical and professional factor. The eigen value of this factor (6.57) indicates that the factor explained about (11.95%) total of variance.

Factor 3 was named political factor the eigen value of this factor (5.36) indicates that the factor explained about (9.75%) total of variance.

Factor 4 was labeled as educational – administrative factor. The eigen value of this factor (4.21) indicates that the factor explained about (7.65%) total of variance.

Factor 5 was labeled as production factor. The eigen value of this factor (3.61) indicates that the factor explained about (6.57%) total of variance.

Factor 6 was labeled as supportive factor the eigen value of this factor (3.51) indicates that the factor explained about (6/39%) total of variance.

Factor 7 was labeled as market factor the Eigen value of this factor (3.17) indicates that the factor explained about (5.77%) total of variance.

Factor 8 was labeled as export factor the eigen value of this factor (2.23) indicates that the factor explained about (4.06%) total of variance.

Factor 9 was labeled as geographical factor the eigen value of this factor (2.13) indicates that the factor explained about (3.95%) total of variance.

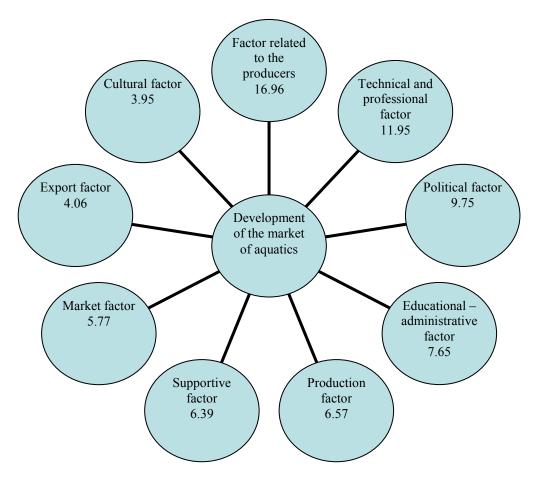


Figure 1. Factor analysis of development of the market of aquatics

#### 4. Conclusion and recommendation

This study was conducted to investigate effective factors of the development of the market of aquatics and products processed from them. To realize the above-mentioned components were studied four groups of population. To achieve mentioned factors have been used exploratory factor analysis technique. Results of prioritizing of factors affecting the development of the aquaculture market shows that Variables such as quality and freshness of fish and processed products, suitable packaging for product maintenance for longer periods of time and education professional ethics and market management method for aquacultures have the highest priority in the development of the aquaculture market from the standpoint of respondents. The result of current research confirms the findings of (aghili et al, 2010); (Soghotifar, 2007) and (heidarnezadian, 2014).

Results of factor analysis showed that factor related to the producers is allocated 16.96% of the variance. This factor with eigenvalues (9.32) has been first factor of the factor analysis of development of the market of aquatics. Therefore, we can say that factor related to the producers, can help to development of the market of aquatics. The results of this part of study are consistent with results of research (Yourself & Shariati, 2009) and (Mohair et al, 2005).

Results of factor analysis showed that technical and professional factor is allocated 11.95% of the variance. This factor with eigenvalues (6.57) has been second factor on the factor analysis of market development of aquatics. The result of current research confirms the findings of (farahmand et al, 2012)! (Bolorian Tehran, 2011) and (Aidani, 2007).

Results of factor analysis showed that political factor is allocated 9.75% of the variance. This factor with eigenvalues (5.36) has been third factor on the factor analysis of market development of aquatics. The result of current research confirms the findings of (farahmand et al, 2012) (Noori zamanabadi, 2007).

Results of factor analysis showed that educational – administrative factor is allocated 7.65% of the variance. This factor with eigenvalues (4.21) has been fourth factor on the factor analysis of market development of aquatics. The result of current research confirms the findings of (Dehdashti & Sayedzadeh, 2006) (Noori zamanabadi, 2007) and (Aidani, 2007).

Results of factor analysis showed that production factor is allocated 6.57% of the variance. This factor with eigenvalues (3.61) has been fifth factor on the factor analysis of market development of aquatics. The result of current research confirms

the findings of (Mirnezami, 2007) and (Bolorian tehrani, 2011).

Results of factor analysis showed that supportive is allocated 6.39% of the variance. This factor with eigenvalues (3.51) has been sixth factor of the factor analysis of development of the market of aquatics. The results of this part of study are consistent with results of research (Yourself & Shariati, 2009): (Noori zamanabadi, 2007) and (Mokhtari et al, 2005).

Results of factor analysis showed that market factor is allocated 5.77% of the variance. This factor with eigenvalues (3.17) has been seventh factor of the factor analysis of development of the market of aquatics. The results of this part of study are consistent with results of research (Dehdashti & Sayedzadeh, 2006): (Noori zamanabadi, 2007) and (Aidani, 2007).

Results of factor analysis showed that export factor is allocated 5.77% of the variance. This factor with eigenvalues (2.23) has been eighth factor of the factor analysis of development of the market of aquatics. The results of this part of study are consistent with results of research (farahmand et al, 2012): (Bolorian tehrani, 2011) and (Aidani, 2007).

Results of factor analysis showed that cultural factor is allocated 3.95% of the variance. This factor with eigenvalues (2.13) has been ninth factor of the factor analysis of development of the market of aquatics. The results of this part of study are consistent with results of research (Noori zamanabadi, 2007): (Mokhtari et al, 2005): (Bolorian tehrani, 2011) and (Aidani, 2007).

According to the results of this research the following suggestions are proposed:

- 1. control and grading of aquatic market and sale centers be done to improve health considerations
- 2. Increase public awareness on the benefits of packaging and familiarity with the advantages of aquatic.
- 3. Provide easy access to the aquatic through create a valid and reliable sites
- 4. It is suggested be provided new ways to more consume of aquatics through establishment of food festival, determining national day of aquatic consumption and advertising by mass media
- 5. It is suggested that aquatic package be offered to consumers with appropriate weights
- 6. It is suggested that be reflect responsible organization performance of aquatic health to the people in order to more familiarities of them about quality standards of packing.
- 7. It is suggested that be created, supportive agencies of domestic and international markets.

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# عوامل مؤثر بر توسعه بازار آبزیان و محصولات فرآوری شده باقر آرایش

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هدف اصلی از این مطالعه ارزیابی عوامل مؤثر بر توسعه بازار آبزیان و محصولات فرآوری شده آن بوده است. این تحقیق کاربردی، برحسب ماهیت، کمی و بر اساس روش جمع آوری اطلاعات، پیمایشی بوده است. جامعه آماری تحقیق شامل کارشناسان جهاد کشاورزی، کروش دهندگان ماهی و فروشندگان آن در شهرستان سرپلذهاب بوده است. از طریق روش سرشماری تمام آنها مورد مطالعه قرار گرفتند (۲۲۱ نفر). ابزار اصلی جمع آوری اطلاعات، پرسشنامه محقق ساخته بود. روایی محتوایی و ظاهری از طریق پانل متخصصان و پایایی از طریق ضریب کرونباخ آلفا (۹۴/۰) به دست آمد. بر اساس نتایج تحلیل عاملی، عاملهای فنی و حرفهای، سیاسی، آموزشی و اجرایی، تولیدی، حمایتی، بازاریابی، صادرات، نوع محصول و جغرافیایی قادر به تبیین ۷۳/۰۸۷ درصد تغییرات متغیر توسعه بازار آبزیان بودند.

المراه

کلمات کلیدی: آبزطین، توسعه بازار، محصولات درطیی