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Comprehensive identification of priorities and behavior analysis of packaged fish buyers in Tehran city using structural equation modeling method

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ABSTRACT

The sustainable production and sale of aquatics processing and packaging factories is closely related to understanding the behavior of consumers and evaluating their purchase priorities. Because it is only in the case of evaluating and mastering the mentioned items that the production centers can produce a product according to the market's desire, thus guaranteeing stable productivity and increasing their profit. The purpose of this research was to evaluate the behavior of packaged fish buyers and to identify their priorities for purchasing the product in Tehran city. For this purpose, a questionnaire based on research assumptions was designed and completed by the statistical community. The statistical population of the research is the whole of Tehran city, that 12 urban areas were randomly selected for the field study with a sample size of 600 people. In order to test the hypotheses and examine the intensity of the relationship between the items, a proportional conceptual model (based on Theory of Planned Behavior) was designed and analyzed by Lisrel software (structural equation modeling). Also, In order to evaluate and rank the priorities of the statistical population in relation to some of product characteristics, Friedman's test was used. The results showed that the variables of packaging characteristics, fish species, processing models, types of supply and quality factors (quality) were significantly effective on the attitude, while the quality variable with an effect coefficient of 0.31 had the greatest effect on the attitude. The place of purchase also had a significant effect on the perceived behavior control and the hypothesis related to it was confirmed. Among the three main elements of the model (attitude towards consumption, subjective norm and perceived behavioral control), attitude towards consumption with an effect coefficient of 0.63 was the most effective element on the intention to buy and consume. In the following, it was found that two variables, price and access, do not have a significant effect on the purchase decision, and the hypotheses related to them were also rejected. The ranking of purchase priorities of Tehrani citizens in relation to fish species, cultured species, types of supply, pack weights, processing models and shopping places showed that the first rank is related to Persian Gulf fish (south), rainbow trout, whole fish (empty stomach with head), weight of 500 to 700 grams, schnitzel and protein supply stores.

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1. Introduction

With the increase in population and the spread of advertisements about the nutritional value of aquatic products, per capita consumption is also increasing. As can be seen in Figure 1, this per capita has increased from about 5 kg in 1379 to about 14 kg in 1400 [1]. Increasing per capita consumption of aquatic products is important in many ways. One of the most important effects of per capita increase is related to job creation and job stability of people who are working in different subcategories of fisheries. Also, since the amount and volume of aquatic exports is not a fixed amount every year and this amount may decrease due to various reasons, domestic consumption can be considered as a pillar in order to maintain sustainable production. Since in different sources, aquatics have always been introduced as health food, maintaining health and preventing various diseases of the population is another important benefit that can be achieved by increasing per capita consumption [2].

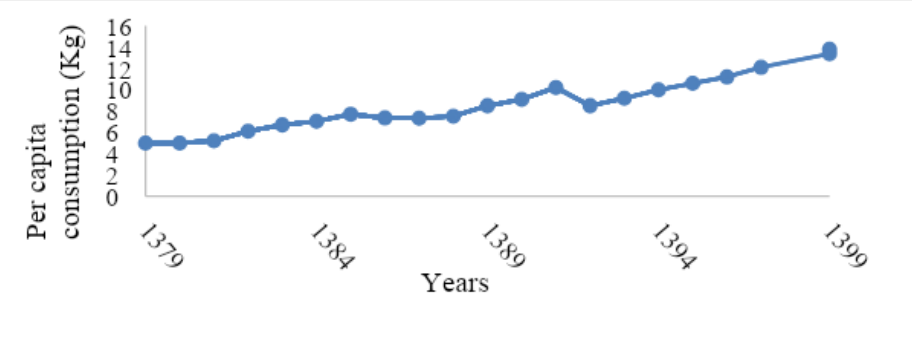

Figure 1- Aquatics per capita consumption in different years

Since in non-coastal cities, consumers have little access to fresh seafood, they inevitably turn to centers that offer packaged and frozen seafood (especially stores that supply protein products and online markets); It is remarkable. In order to supply the packaged aquatic products needed by the consumers, in addition to the food industry factories, small workshops also pack fishery products and distribute them in the stores of the city. Sustainable production and higher profits of these production centers strongly depend on the direct knowledge of consumer behavior. Because it is only in this way that they can produce a product according to the wishes and tastes of the majority of the consumer market. With the passage of time and the advancement of marketing science, as well as with the increase in competition between food producing companies, it was gradually determined that consumers are considered as the main keys to the success or failure of a manufacturing company. Therefore, evaluating the behavior of consumers and producing a product based on this evaluation that can meet the needs of the market and is in accordance with the tastes and interests of the people will help the companies related to the food industry in the matter of sustainable production and the superiority of the competition in the market. It is also based on the study and knowledge of consumers' behavior that those involved in the health of the society and production can contribute to the per capita increase of those products by identifying the factors and barriers affecting the amount of consumption of beneficial products (such as aquatic) in the society.

Today, researchers in developed countries use strong and well-founded theories to evaluate consumer buying behavior. One of the important theories in the field of evaluating consumer behavior is the theory of planned behavior. This theory includes the study of attitudes (the basis of psychological science) and the total of groups influencing consumer behavior. The theory of planned behavior is based on the principle that people

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make logical and rational decisions based on available information [3]. This theory consists of five constructs, which are attitude, subjective norms, perceived behavioral control, behavioral intention, and consumer behavior; which are actually its main pillars. Theory of Planned Behavior, in 1985 byAjzen was presented and it is a cognitive model of human behavior whose main focus is on predicting and understanding well-defined behaviors. This theory provides an organized framework for predicting and explaining human behavior and is derived from the theory of reasoned action, which states that the probability of a person engaging in a specific behavior can be predicted by his intention to do that work [4] and this is supported by many empirical evidences. It has been confirmed [5]. ActuallyAjzen He expanded the theory of reasoned action by introducing the perceived behavior control structure as a determining factor of behavioral intention and target behavior and explained it as the theory of planned behavior.

The purpose of this research is to evaluate the behavior of packaged fish consumers in Tehran using the theory of planned behavior and structural equation modeling. In addition, the most important priorities of the statistical community will also be ranked in the field of purchasing.

2- Materials and methods

2-1- Questionnaire design

In order to evaluate the behavior of consumers and buyers of packaged fish, a questionnaire was designed according to the assumptions of the research, which consisted of 65 questions (in two parts, main questions and demographic questions). The main questions were asked based on the range of five Likert options (very little with code 1, little with code 2, moderate with code 3, much with code 4 and very much with code 5). At the beginning of the questionnaire, it was stated that only packaged fish consumers can participate in this project. In order to design the questionnaire questions, similar domestic and foreign studies that evaluated the behavior of aquatic consumers and their preferences for consumption, the opinions of university professors, various questionnaires and library studies were used.

2-2- Determination of reliability (reliability)[1] questionnaire

Cronbach's alpha method was used to determine the reliability of the test. For this purpose, an initial sample including 30 questionnaires was pre-tested and then using the data obtained from these questionnaires and with the help of statistical software.$SPSS_{22}$ The amount of confidence coefficient was calculated by the mentioned method**.** This coefficient was calculated as 0.89 for the current research questionnaire, which indicates an acceptable level of reliability for the questions asked of people.

2-3- Determining validity (validity)[2] questionnaire

In order to check the validity of the questionnaire, face validity was first used. At this stage, by conducting various interviews and obtaining the opinions of experts, the necessary corrections were made, and in this way, it was ensured that the questionnaire measures the same characteristic that the researchers wanted. In order to be more accurate and reliable in discussing the appropriateness of the questionnaire questions and the items (structures) of the model designed for the assumptions (validity of the questions), confirmatory factor analysis was used, the results of which are presented in Table 1. According to the values of factor loadings (which are greater than 0.3 for all questions) andT-value (which was recorded for all questions outside the range of -1.96 to 1.96) it can be seen that the designed questions have a good level of validity.

Table 1. Factor loadings and T-value for questions (confirmatory factor analysis)

Questions	Factor loading	T-value	Questions	Factor loading	T-value
1.Attitude			7. Subjective norms		
Pleasure feeling	0.39	6.84	People's opinion	0.91	16.74
Good feeling	0.51	9.12	Family's opinion	0.49	7.83
bad feeling	0.45	8.66	Expert's opinion	0.46	6.27
2.Packaging			Seller's opinion	0.67	11.85
Brand	0.38	5.91	8. Perceived behavior control		

1 -Reliability

2 -Validity

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Design and color	0.71	12.88	I will definitely buy	0.53	8.46
Size and weight	0.59	9.96	I will probably buy	0.32	6.21
Material	0.31	5.18	I have to buy	0.93	17.63
Ease of opening the package	0.55	8.79	9. Place		
Insertion NV[3] and HI[4]	0.84	15.72	Fish market	0.66	10.74
3. Species			Protein food supply stores	0.75	12.38
Caspian Sea fish	0.63	10.57	Online shop	0.41	8.25
Persian Gulf fishes	0.41	8.25	10. Price		
Cold water farmed fish	0.76	12.99	Expensive	0.72	12.33
Warm water farmed fish	0.52	9.42	Cheap	0.65	9.28
4. Processing type			Average	0.57	8.81
Smoked	0.88	16.32	10. Availability		
Schnitzel	0.39	7.75	Hard	0.75	14.34
Nuggets	0.62	8.23	Easy	0.88	16.42
Unprocessed	0.67	9.94	Trying to buy	0.79	14.96
5. Type of supply			11. Intention		
Whole fish- ES[5]	0.53	7.86	I want to eat	0.38	6.57
Whole fish without head- ES	0.72	11.62	I have a plan to eat	0.64	10.39
Fillet	0.85	14.24	Try to eat	0.45	7.14
Steak	0.37	5.61	12. Final behavior		
6. Quality			Buying once a week	0.85	14.37
No physical pollution	0.46	6.83	Buying twice a month	0.43	8.16
Texture Color	0.61	10.64	Buying once a month	0.78	12.77
Smell	0.49	8.71	Buying once every two months	0.57	9.65
Taste	0.58	9.87	Buying once every three months	0.54	9.31

2-4- Research assumptions and building a conceptual model based on them

By studying internal and external sources, certain assumptions were made and then a conceptual model was designed according to the assumptions, whose diagram is presented in Figure 2. The research hypotheses are:

1. The characteristics of packaging have a positive and significant effect on the attitude of buyers (relative to consumption).
2. The type of fish has a positive and significant effect on the attitude of buyers (relative to consumption).
3. The type of fish processing has a positive and significant effect on the attitude of buyers (relative to consumption).
4. The fish supply model has a positive and significant effect on the attitude of buyers (relative to consumption).
5. The quality factors of fish have a positive and significant effect on the attitude of buyers (relative to consumption).
6. The characteristics of the point of sale have a positive and significant effect on the control of the perceived behavior of buyers.
7. The subjective norm of buyers has a positive and significant effect on the decision to buy.
8. Perceived behavioral control has a positive and significant effect on the purchase decision.
9. The attitude towards fish consumption has a positive and significant effect on the decision to buy.

3- Nutritional Value
4- Health Information
5- Empty Stomach

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10. The price of the product has a positive and significant effect on the decision to buy.
11. Access to the product has a positive and significant effect on the purchase decision.
12. The decision to buy has a positive and significant effect on the final behavior (purchase and consumption).

And finally, based on the above assumptions, the research model was designed as follows (Figure 2).

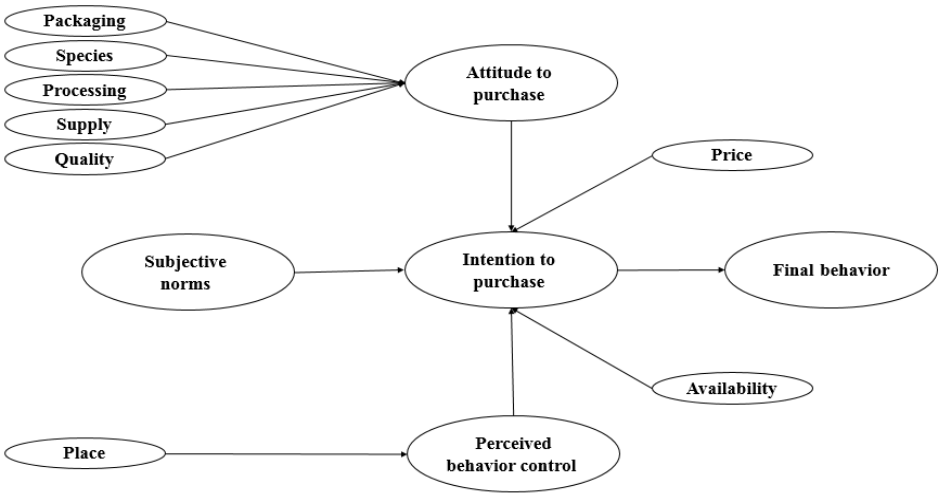

Fig 2. Diagram of conceptual model of research

5-2- Statistical population

The statistical population of the current research is the whole city of Tehran, which randomly selected 12 regions out of 22 municipal regions (regions one, two, three, four, five, six, eight, nine, twelve, fourteen, sixteen, and twenty-two) to carry out the field stages of the research. were chosen. Sample size through Kekran's formula[6] 384 people were calculated, but in order to obtain more reliable results, 600 questionnaires were used. Figure 3 shows the 12 districts of Tehran municipality that were evaluated in this research in terms of purchasing behavior and consumption of packaged fish. The sample size in each urban area was determined in proportion to the total number of households in that area.

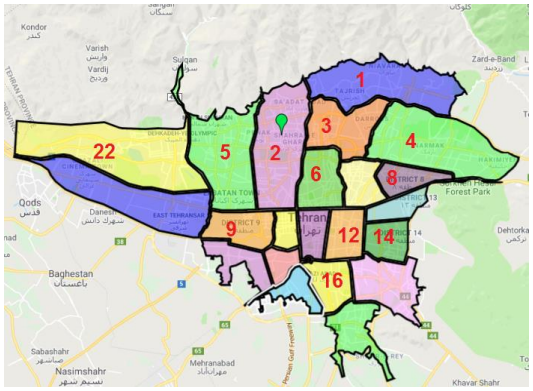

Fig 3. Urban areas under study

6-2- Statistical analysis

In order to perform confirmatory factor analysis, checking the acceptance or rejection of the hypotheses (at 95% confidence level), as well as the intensity and direction of the relationship between the constructs of the model, structural equation modeling method and Lisrel software (version 8/80) were used. In this method, the research model is in two standard modes (in order to check the effect coefficients between the model structures) and significance (to evaluate the status of assumptions and

6 -Cochran

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valuesT) Done. Accomplished. Assumptions that index valuesT-value For them, if it is outside the range of -1.96 to 1.96, they will be accepted and otherwise they will be rejected. In the following,In order to evaluate and rank the priorities of the statistical community about some product characteristics (packaged fish) from the Friedman test (softwareSPSS$_{22}$) was used.

3-Results

3-1- Demographic characteristics of the consumer society

Table 2 shows the demographic characteristics of the consumer community. According to this table, in terms of gender and marital status, most of the surveyed society are men and married respectively. Most of the people in this society are between 35 and 50 years old and free from the point of view of job position. About 50% of the consumer society has an income between 15 and 20 million tomans. As can be seen in Table 2, we tried to use all spectrums and different social classes in terms of demographic characteristics for interviewing and completing the questionnaire. This will certainly lead to more reliable results and increase the validity of accepting or rejecting hypotheses.

Table 2. Socio-Demographic Characteristics of The Sample (% respondents, n=600)

Characteristics	Abundance	Characteristics	Abundance
Gender		Place of birth	
Male	66.1	Coastal city	11.7
Female	33.9	Non-coastal city	88.3
Age		Household size	
<20 years	1.1	Two	5.8
20-35 years	33.4	Three	25.6
35-50 years	58.4	Four	48.3
50-65 years	6.5	Five and more	20.3
65-80 years	0.6	Income (Rials)	
Education		100-150 millions	25.4
College education	74.3	150-200 millions	50.1
Diploma & less	25.7	200-250 millions	15.8
Marital Status		250 millions≤	8.7
Married	80.1		
Single	19.9		
Job			
Free	56.1		
Employee	15.3		
Student	11.8		
Unemployed	9.3		
Retired	7.5		

2-3- Implementation of the conceptual model of research in standard and meaningful mode

Figure 4 shows the implementation of the research conceptual model in two meaningful and standard modes (using Lisrel software). According to this figure, among the research hypotheses, only hypotheses No. 10 and 11 (price influence and accessibility on the purchase decision, respectively) due to the placement of valuesT-value They are in the interval**1/96 to 1/96** Rejection and other hypotheses were confirmed. This means that the two variables of price and access did not have a significant effect on the decision to buy packaged fish by the studied community, and the hypotheses related to them were not accepted. As can be seen in Figure 4, among

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the variables affecting buyers' attitude towards the consumption of packaged fish, the quality variable (quality indices of fish) showed the greatest effect (with an effect coefficient of 0.31). Fish species, processing type, type of supply (cut) and packaging specifications were respectively in the next ranks of influence on buyers' attitude. In the following, it was determined; Among the three constructs of purchase attitude, subjective norm, and perceived behavioral control, buyers' attitude towards the consumption of packaged fish is the most effective construct on the purchase decision. In Table 3, the coefficients of the effect (path) between the hypothesis items andT-value (Acceptance or non-acceptance of assumptions) is presented in a summary form.

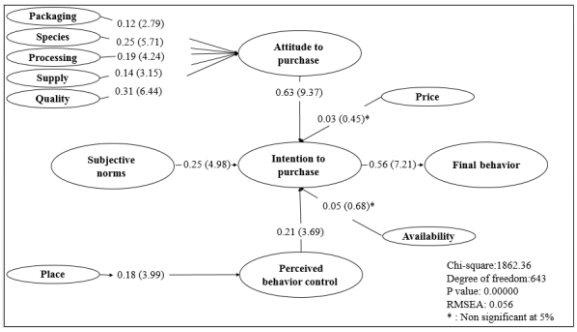

Figure 4. Implementation of the research model in two standard and significant modes

Table 3. The status of research hypotheses (Accept or Reject)

Not	Hypotheses	Coefficient	T-value	Results
1	Packaging specifications have a positive and significant effect on buyer's attitude.	0.12	2.79	Accept
2	Fish species have a positive and significant effect on buyer's attitude.	0.25	5.71	Accept
3	Fish processing models have a positive and significant effect on buyer's attitude.	0.19	4.24	Accept
4	Fish supply models have a positive and significant effect on buyer's attitude.	0.14	3.15	Accept
5	Quality factors of fish have a positive and significant effect on buyer's attitude.	0.31	6.44	Accept
6	Characteristics of sales place have a positive and significant effect on the buyer's perceived behavior control.	0.18	3.99	Accept
7	Buyer's subjective norms has a positive and significant effect on the intention to buy.	0.25	4.98	Accept
8	Buyer's perceived behavior control has a positive and significant effect on the intention to buy.	0.21	3.69	Accept
9	Attitude towards fish consumption has a positive and significant effect on the intention to buy.	0.63	9.37	Accept
10	Price of the product has a positive and significant effect on the intention to buy.	0.03	0.45	Reject
11	Access to the product has a positive and significant effect on the intention to buy.	0.05	0.68	Reject
12	Intention to buy has a positive and significant effect on the final behavior (purchase and consumption).	0.56	7.21	Accept

3-3- Model fit indices

Table 4 shows the fit indices of the model. Considering that these indicators are at an acceptable level compared to the standard, it can be claimed that the model has a good fit. This means that the model has a very high validity for measuring and evaluating the relationships between the investigated variables.

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Table 4. The Measurement of model Goodness of Fit Index (GOFI)

Fit Index	Result	The Fit Criteria	Model Evalution
Chi-Square/Df	2.89	Chi-Square/Df ≤5	Good Fit
RMSEA	0.056	RMSEA ≤ 0.08	Good Fit
CFI	0.95	CFI ≥ 0.90	Good Fit
GFI	0.93	GFI ≥ 0.90	Good Fit
AGFI	0.91	AGFI ≥ 0.90	Good Fit
IFI	0.94	IFI ≥ 0.90	Good Fit
NFI	0.90	NFI≥ 0.90	Good Fit
NNFI	0.96	NNFI ≥ 0.90	Good Fit

3-4- The first priorities of the consumer community in choosing packaged fish

Table 5 shows the preferences of the consumer community regarding the selection of fish species, farmed fish species, supply types (cuts), package size and weight, processing model and supply location. As can be seen in this table, southern fish was the first priority of about 43% of the consumers (with a rank of 1 and an average rank of 1.79). Also, the northern fishes ranked second with an average rank of 2.12. Next, among the farmed species, rainbow trout ranked first (average rank 1.44); In this way, 45.2% of the respondents put this species as the first priority. In addition, salmon was ranked second with an average rating of 2.23. In the discussion of the supply model, the whole gutted fish (with the head) was the first priority of about 50% of people (with a rank of 1 and an average rank of 1.35). Regarding the size and weight of the fish package, the first rank was related to the weight of 500 to 750 grams (with an average rank of 1.87). Schnitzel fish was the first choice of 42.3 consumers in the discussion of types of processing (first rank with an average rank of 1.91); In addition, fish nugget was ranked second and 35.9% of people chose this type of processing as their first priority (with an average rating of 2.39). Regarding the types of shopping places, more than half of the respondents stated that protein supply stores are their first shopping priority (1st rank with an average rank of 1.38). Also, 31.7 percent of people chose online stores as their first priority (second rank with an average rank of 2.27).

Table 5. Consumer's preferences regarding the purchase of packaged fishes

Options	Consumer preferences				Average score	rank	Friedman	Significance level
	1	2	3	4				
1. Fish species								
Caspian Sea fish	35.2	26.9	20.5	17.1	2.12	2	368.96	0.001
Persian Gulf fishes	42.6	31.4	15.8	10.1	1.79	1		
Cold water farmed fish	19.4	25.5	39.2	15.9	2.91	3		
Warm water farmed fish	2.8	16.2	24.3	56.5	3.36	4		
2. Farmed fish								
Rainbow trout	45.2	38.7	14.8	1.1	1.44	1	339.24	0.001
Salmon	39.1	32.9	21.8	5.6	2.23	2		
Tilapia	4.2	9.3	20.6	65.6	3.25	4		
Cypridae	11.3	19.1	42.5	26.9	2.78	3		
3. Type of supply								
Whole fish-empty stomach	48.4	39.8	9.9	1	1.35	1	375.53	0.001

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Whole fish without head-empty stomach	33.1	40.9	18.2	7.4	2.1	2		
Fillet	17.2	18.7	49.3	14.6	2.83	3		
Steak	1.1	0.4	22.6	75.8	3.46	4		
4. Weight of packaging								
250-500g	12.5	20.1	29.5	36.7	3.11	3	384.91	0.001
500-750g	41.9	34.2	20.3	3.6	1.87	1		
750-1000g	36.8	29.6	23.4	10.1	2.49	2		
1000-1500g	8.7	16	26.1	49.2	3.56	4		
5. Type of processing								
Smoked	16.1	21.5	35.1	27.1	3.16	3	365.72	0.001
Schnitzel	42.3	36.8	15.2	5.6	1.91	1		
Nuggets	35.9	29.7	23.5	10.7	2.39	2		
Flavored by different spices	5.5	12	26.2	56.1	3.75	4		
6. Place of purchase								
Fish market	12.5	25.7	43.2	18.5	2.99	3	382.44	0.001
Protein food supply stores	52.6	29.2	16.1	2.1	1.38	1		
Online shop	31.7	30.9	22.7	14.5	2.27	2		
Hypermarkets	3.2	14.2	18	64.6	3.63	4		

4-Discussion

Since the producers' special attention to the consumers' interests, preferences, priorities and barriers to purchase is considered necessary for sustainable production and productivity as well as increasing the profits of food factories, therefore, studies on the recognition and evaluation of consumers' behavior (a type of beneficial food) can be up to significantly contribute to this matter. In the upcoming research, it has been tried to investigate the behavior of packaged fish consumers in Tehran based on the theory of planned behavior and its main structures. This research somehow provides comprehensive information about buyers' behavior and their preferences to the production and supply centers of packaged fish in Tehran.

One of the constructs of the theory of planned behavior is attitude. Attitude is the type and degree of feeling a person has about a stimulus. In fact, it is these attitudes that make people interested in something or hate it and cause a person to tend to the product or avoid it [6]. In the present study, the attitude structure had a positive and significant effect on the decision to buy and consume packaged fish, and this finding is in line with the research results of Verbeck and Walker (2005), Rorthwaite and Elsen (2009), Sang and Elsen (2012), Rihani Pool and Colleagues (2019b) corresponds [7-10]. On the other hand, in the research of Qifarini et al. (2018), the assumption of the effect of attitude on the decision to buy and consume shrimp (Indonesia) was rejected, which contradicts the results of the upcoming research [11].

In the leading research, it was found that the five variables of packaging characteristics, fish species, processing models, types of supply and quality (qualitative factors) have a positive and significant effect on the attitude of the consumer community, and among them, the quality and characteristics of packaging have a special place (have effect coefficients are significant). This finding indicates that the investigated quality factors (color, smell, taste and physical pollution) as well as packaging characteristics (brand, design and color, size and weight, package material, ease of opening and the inclusion of nutritional value and health information of the product) They have a high potential to change people's attitudes, and by improving each of the mentioned items, it is possible to achieve more sales and sustainable profits through positive consumer perception of the product.

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In the research of Rihani Pool et al. (2019b), like the present research, it was found that two quality variables (qualitative factors) and shrimp packaging characteristics have a positive and significant effect on the attitude of Tehrani citizens [10]. The results of a study conducted to investigate people's attitude towards fish consumption in Vietnam showed that the quality factor has a positive and significant effect on people's attitude and confirmed the findings of the current research in this field [9]. In Ahmad's (2009) research, the fish quality factor had a positive and significant effect on the attitude of Dhaka citizens [12].

Another construct of the theory of planned behavior is the mental norm. Subjective norms express the social pressure perceived by the individual to perform or not perform the target behavior. In fact, these norms set standards for implementation that people can accept or reject. People often act based on their perceptions of what others (friends, family, colleagues, general public, experts, etc.) think they should do, and their intention to accept behavior is potentially influenced by people with whom they have close relationships. have [13]. Results The present study showed that the subjective norm positively and significantly affects the decision to buy and consume the product. This finding indicates that the people whom consumers pay attention to are able to influence consumers both actively through advice and opinion and passively through their behavior [14]. In the research of Verbeck and Walker (2005), the subjective norm influenced the decision to consume (buy) fish [7]. In the researches of Ahmed (2009), Sang and Elsan (2012), Najafabadi and Al-Hosseini al-Madrsi (2017), similar to the present study, the subjective norm was significantly effective on the decision to buy (consumption) of different foods (fish and organic products) [12, 9 and 15]. In the study of Qifarini et al. (2018) which was about the application of the pattern of planned behavior in the consumption of shrimp (Indonesia), out of the three constructs of this pattern, only the subjective norm had a significant effect on the decision to buy and consume, and this finding is according to the results of the leading research. [11].

Another important construct of the theory of planned behavior is the construct of perceived behavioral control. This structure expresses the perception of the internal and external limits of behavior. In other words, this structure expresses beliefs about internal and external factors that may prevent behavior. In simple terms, perceived behavioral control refers to the degree of voluntary control of a person in performing or not performing a behavior. If people believe that they do not have the resources or opportunities to perform the desired behavior, the probability of performing that behavior will be lower [5]. In the current research, it was found that this structure has a positive and significant effect on the decision to buy and consume the product. The impact of the perceived behavior control structure on the decision to buy and consume fish (aquaculture) was also confirmed in the research of Verbek and Walker (2005), Ahmed (2009) and Rihani Pool et al. (2019a) [7, 12 and 2]. However, the results of Sang and Elsen (2012) and Qifarani et al. (2018) researches in this field were contrary to the findings of the present study, and in the two mentioned studies, the perceived behavior control structure did not have a significant effect on the decision to buy and consume (aquatic) [9 and 11].

Today, with the development of packaged fish supply places, depending on the characteristics of the place, such as the decor and layout, hygiene and cleanliness of the environment, crowdedness or silence of the center, the smell and ventilation of the supply place, the cover and cleanliness of the salesperson, the appropriate dealings of the salesperson with the customer, the management of the center, Stylish and up-to-date point of sale, easy access, etc., people prefer a shopping center or place [16]. The findings of the present study showed that the place of purchase of packaged fish is significantly effective on the perceived behavior control structure, which is

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consistent with the research of Reyhanipol et al. (2019a) [2].

In this study, contrary to expectations, the price variable did not have a significant effect on the structure of the decision to buy packaged fish. Several possible reasons can contribute to this finding. Among them, maybe the economic situation of the consumer society is such that they don't have any problem to buy packaged fish in an average amount of one or two kilograms per month. The next possible reason can be related to the consumer's understanding of the nutritional value of fish and their type of diet. This means that the studied community is fully aware of the nutritional value of fish and according to the opinion of experts, it has seriously included this aquatic in its diet. A research conducted on the conceptual model of fish consumers' behavior in the west of Mazandaran province showed that the price variable does not have a significant effect on citizens' attitudes towards purchasing and consumption [17], which is in line with the leading research. But in many studies, this factor has been very important in the decision to buy and consume aquatic products [18-21].

In the continuation of the leading research, it was found that the access factor has no significant effect on the purchase decision structure, which can be due to the easy access of Tehrani citizens to the supply and sales centers of packaged aquatics. The research of Reyhani Pool et al. (2019b), which comprehensively investigated the factors affecting the increase in shrimp consumption per capita in Tehran, showed, like the current research, that the access variable has no effect on the structure of the decision to buy and consume the product [10].

In the current research, a series of preferences and priorities of Tehrani citizens were examined and evaluated regarding things such as fish species, cultured species, types of supply, package weights, processing model and place of purchase. , helps to accurately understand the consumer market and meet the needs of citizens. The evaluation of the preferences of the consumer community regarding the selection of packaged fish species showed that among northern fish, southern fish, cold-water farmed fish, and tropical fish, the first rank belongs to southern fish, which shows the popularity of these fish among the citizens of Tehran. Northern, cold-water and warm-water fish were placed in the next ranks, respectively. In the following, it was found that among the farmed species, rainbow trout and salmon ranked first and second respectively in terms of acceptance by citizens, and it is necessary for producers and suppliers in Tehran to pay special attention to this finding. In the discussion of the types of fish supply in the form of packaging, among whole gutted fish with head, gutted whole fish without head, fillet and steak, gutted whole fish with head was the most popular, which shows that Tehrani consumers prefer a form of fish that has The least disturbed are more inclined. The results of the evaluation of the preferences of Tehrani citizens regarding the size and weight of the fish package showed that the size of 500 to 750 grams and also 750 to 1000 grams has the most popularity (first and second place, respectively), and this result should be the attention of workshops and packaging factories as well as sellers. The surface of the city of Tehran should be located. Various factors such as affordability, household consumption, household population, household income, etc. can be involved in this choice. In this research, it was found that among the different processing models, such as smoked, schnitzel, nuggets, and flavored, Tehrani households are more inclined towards schnitzel, and this model is ranked first. Meanwhile, nugget and smoked form were ranked next. In general, domestic researches have shown that the smell of seafood is one of the main obstacles to consumption among Iranian households [22, 23]. For this reason, the sciences related to the food industry and the processing of fishery products have always tried and continue to use special techniques to produce products according to people's taste by improving the smell or

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eliminating the smell of aquatic products. He pointed out smoked fish and...

Today, packaged fish is sold in various places such as fish markets, protein product supply stores, hypermarkets, etc. Another center where aquatic products are sold and which has received serious attention in recent years are online stores. The results of the leading research showed that among the mentioned centers, the first rank is related to the stores that supply protein materials. In these stores, besides seafood, other protein products such as chicken, red meat, sausages, sausages and other protein products are also offered, which makes buyers more inclined to these places to buy packaged fish. In addition, a calm environment, without unpleasant odors, sending orders at home, providing services throughout the day and night, etc. are among other things that contribute to this trend. In the following, it was found that the second rank of shopping places is related to online stores, which deserves attention in its place. In these stores, all kinds of packaged aquatic products are offered, and the buyer makes his purchase in just a few minutes and receives his order at home in a short time. The ease of buying and receiving products is one of the main reasons why citizens refer to these online centers. For a long time, local markets for the sale of aquatic animals have been established in most cities, and citizens used to buy a large part of their aquatic needs from these markets. But the results of the present research showed that the markets for the supply of aquatic products are in the third place and the citizens of Tehran do not have much desire to buy packaged fish in these markets. Crowding and unpleasant smell of the environment can be among the possible reasons for this finding. Hard access can also be another possible factor in reducing the desire of citizens to these markets. Because the seafood markets, unlike protein supply stores, are often located in a certain part of the city, and citizens who are far away from this point, do not have much inclination to the mentioned markets. According to the findings, hypermarkets (supermarkets) ranked fourth among other shopping places and only 3% of Tehrani citizens put these places as the first priority for buying packaged fish. In general, there are few hypermarkets in Tehran where packaged fish can be found in their refrigerators, and perhaps this is the reason why citizens do not visit these places to buy packaged fish.

5. Conclusion

Among the main constructs of the theory of planned behavior, the attitude of Tehrani citizens towards the purchase and consumption of packaged fish is the most effective construct on the decision to purchase and consume the product, and since quality factors and packaging characteristics were among the most important factors affecting the attitude of the statistical population, promotion and improvement Quality measurement indicators and product packaging can increase purchasing (consumption) and subsequently production and stable supply of producers (sellers). Southern fishes and rainbow trout species, as well as the supply model of whole gutted fish with head, are particularly popular among Tehrani citizens, and consumers prefer to buy these fishes in packages weighing 500 to 1000 grams. Also, the processing of fish in the form of schnitzel and nuggets has more fans than other processing models, and this issue and other cases mentioned above are very worthy of attention from the managers of aquatic processing factories and suppliers in Tehran. Protein product supply stores as well as online markets are the main centers where Tehrani buyers go to buy packaged fish. Considering this result, it is necessary to expand the services of product supply stores throughout the city of Tehran in order to facilitate the purchase of citizens. The number of online markets and the improvement of the quality of their services should be given special attention.

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مقاله علمی_پژوهشی

شناسایی جامع اولویت‌ها و تحلیل رفتار خریداران ماهی بسته‌بندی در شهر تهران با استفاده از روش مدل‌سازی معادلات ساختاری

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چکیده

تولید و فروش پایدار کارخانجات فرآوری و بسته‌بندی آبزیان، ارتباط تنگاتنگی با شناخت رفتار مصرف‌کنندگان و ارزیابی اولویت‌های خرید آن‌ها دارد. چرا که فقط در صورت ارزیابی و تسلط بر موارد مذکور است که مراکز تولیدی می‌توانند محصولی مطابق میل بازار تولید و بدین ترتیب بهره‌وری پایدار و افزایش سود خود را تضمین کنند. هدف تحقیق حاضر نیز ارزیابی رفتار خریداران ماهیان بسته‌بندی و شناسایی اولویت‌های آن‌ها جهت خرید محصول در شهر تهران بود. به همین منظور پرشسنامه‌ای مبتنی بر فرضیات تحقیق طراحی و توسط جامعه آماری تکمیل شد. جامعه آماری پژوهش کل شهر تهران است که به صورت تصادفی ۱۲ منطقه شهری جهت مطالعه میدانی با حجم نمونه ۶۰۰ نفر انتخاب شدند. به منظور آزمون فرضیات و بررسی شدت رابطه بین گویه‌ها، مدل مفهومی متناسب (براساس نظریه رفتار برنامه‌ریزی‌شده) طراحی و توسط نرم‌افزار لیزرل (مدلسازی معادلات ساختاری) مورد تجزیه و تحلیل قرار گرفت. نتایج نشان داد که متغیرهای مشخصات بسته-بندی، گونه‌های ماهی، مدل‌های فرآوری، انواع عرضه و فاکتورهای کیفی (کیفیت) به صورت معنی-داری بر سازه نگرش موثر بودند که در این بین متغیر کیفیت با ضریب اثر (مسیر) ۰/۳۱، بیشترین اثر را بر سازه نگرش داشت. مکان خرید نیز بر سازه کنترل رفتار درک‌شده اثر معنی‌داری ارائه کرد و فرض مرتبط به آن تائید شد. از بین سه سازه اصلی مدل (نگرش به مصرف، هنجار ذهنی و کنترل رفتار درک‌شده)، نگرش به مصرف با ضریب اثر ۰/۶۳، موثرترین سازه بر تصمیم به خرید و مصرف بود. در ادامه مشخص شد دو متغیر قیمت و دسترسی اثر معنی‌داری بر سازه تصمیم به خرید ندارند و فرضیه‌های مرتبط با آن‌ها نیز رد شد. رتبه‌بندی اولویت‌های خرید شهروندان تهرانی در رابطه با گونه‌های ماهی، گونه‌های پرورشی، انواع عرضه، اوزان بسته، مدل‌های فرآوری و اماکن خرید نشان داد که رتبه نخست به ترتیب مربوط ماهیان خلیج فارس (جنوب)، قزل‌آلای رنگین‌کمان، ماهی کامل شکم‌خالی با سر، وزن ۵۰۰ تا ۷۰۰ گرم، شنیسل و فروشگاه‌های عرضه مواد پروتئینی بود.

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