Acta Aquatica Turcica
E-ISSN: 2651-5474 16(2), 158-169 (2020) DOI: https://doi.org/10.22392/actaquatr.619093

Dynamics of Competition in the Marine Aquaculture Industry: A Research on Turkey

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Research Article

Received 12 September 2019; Accepted 13 February 2020; Release date 01 June 2020.

How to Cite: Uzmanoğlu, M. S., & Arslan, F. M. (2020). Dynamics of competition in the marine aquaculture industry: A research on Turkey. *Acta Aquatica Turcica, 16*(2), 158-169. https://doi.org/10.22392/actaquatr.619093

Abstract

In this study, dynamics of competition in the marine fish culture industry in Turkey is investigated. Today, with the development of technology people's access to information has facilitated. People, with access to information, began to give importance to - healthful nutrition. Therefore; as a source of healthful protein, the demand for fish is increasing day by day. Also, this increase in demand motivates the growth of the fish farming industry intensively. Consequently the production of fishery products is growing almost without any problem. Enterprises that are reaching higher levels in technical knowledge on aquaculture- face fierce competition with each other. This study aims to uncover the dynamics of competition in the marine aquaculture industry by evaluating the perceptions of different parties such as: aquaculture enterprises, feed producers, processing enterprises, the ministry, universities, retail businesses, research institutes, and suppliers that take place in the sector. The survey prepared for this purpose was conducted with 344 people. Results were evaluated and interpreted both as a whole and separately according to business types in the sector. The results show that in the marine aquaculture industry, selling prices of products, quick delivery of products to the market, and financial power are the most important dynamics of competition.

Keywords: Aquatic products culture, competition, dynamics of competition, marine fish culture, perception of competition factors

Deniz Balıkları Yetiştiriciliği Sektöründe Rekabet Unsurları: Türkiye Üzerine Bir Araştırma

Özet

Bu çalışmada Türkiye'de deniz balığı yetiştiriciliği sektöründe rekabet dinamikleri incelenmiştir. Günümüzde teknolojinin gelişmesiyle beraber insanların bilgiye ulaşması kolaylaşmıştır. Bilgiye ulaşma ile beraber insanlar sağlıklı beslenmeye önem vermeye başlamışlardır. Bu nedenle sağlıklı protein kaynağı olan balığa talep gün geçtikçe artmaktadır. Bu artan talep nedeniyle de balık yetiştiriciliği sektörü her geçen yıl büyümeye devam etmektedir. Günümüzde artık balık üretiminde sıkıntılar yaşanmamaktadır. Yetiştiricilikte teknik bilgi anlamında üst seviyelere ulaşan işletmeler birbirleriyle yoğun rekabet içerisine girmektedirler. Bu çalışmanın amacı, deniz balığı yetiştiriciliği sektöründe artan rekabet dolayısıyla sektörde yer alan yetiştiriciler, yem üreticileri, işleme işletmeleri, bakanlık çalışanları, üniversiteler, perakende işletmeler, araştırma enstitüleri ve tedarikçi işletmelerde çalışanların sektörde rekabet dinamiklerini nasıl algıladıklarını ortaya koymaktır. Bu amaçla hazırlanan anket 344 kişi ile gerçekleştirilmiştir. Bulgular sektörde yer alan işletme tiplerine göre ayrı ayrı ve toplu olarak değerlendirilmiş ve yorumlanmıştır. Sektörde ürünün satış fiyatı, finansal güç ve pazara hızlı ürün sunmanın rekabette en önemli dinamikleri oluşturduğu belirlenmiştir.

Anahtar kelimeler: Su ürünleri yetiştiriciliği, rekabet, rekabet unsurları, deniz balıkları yetiştiriciliği, rekabet unsurlarının algılanması

INTRODUCTION

Today, with the developing technology, producers and consumers can access information quite easily. This causes consumers to become conscious and have easy access to information about businesses. Therefore, competition between businesses is increasing. With increasing competition,

businesses need to constantly review their strategies in order to compete in the market. In what manner businesses perceive competition in the sector has a major effect on how they react.

With the effect of globalization, businesses are now active in a competitive market. For this reason, the businesses should not only create their own strategies, abilities, and sources, but also take into account the strategies, sources, and abilities of the competitors as well. The competitive advantage of businesses can become invalid with new developments in the communication and technology sectors.

Turkish Language Association (TLA) defines competition as the debate, contest, and race between the people with the same aim. In the economic context, competition is defined as the situation where there are numerous competitors, among whom there are producers and consumers who determine the ongoing price levels when meeting in a marketplace, where the entrance and exit of parties are free, the information flow is complete and the product is homogenous and where price is considered as data (Gürpınar, 2007). There are two types of competitors in generic terms: direct and indirect competitors. Direct competitors compete by offering similar products to the same consumers. Since the products or services are very similar, it is quite easy to determine direct competitors. Indirect competitors on the other hand, compete by offering substitute products to the same consumers. However, it is not easy to detect indirect competitors as it is very hard to completely understand which products customers use in place of others. While businesses need to observe direct competitors closely, they must also keep an eye on indirect competitors as well even if not as closely as direct competitors. The reason for this is that there is always the possibility that indirect competitors may become direct competitors by introducing very similar product to the market (Arslan, 2012).

The competition strategy reflects the preferences of any business regarding how it will compete to succeed and can continue its existence in a certain sector. Businesses design a unique value mix compared to their competitors by determining a competition strategy and in the scope of this aim, they tend to choose different activities consciously (Porter, 1996). Competition strategy is defined as achieving a defensible position in a sector, successfully dealing with five competitive forces, and thus engaging in aggressive and defensive actions for the firm to achieve a great return on investment (Porter, 1998). Each company that competes in a certain sector has a competitive strategy, whether it is clearly defined or not. This strategy can be created by the activities of the various functional units of the company, whether or not it is developed through a planning process (Porter, 2000).

Porter has identified five forces that will make the market or market segment attractive in the long-term. These five powers are direct competitors in the sector (industry rivals), potential new entrants, threat of substitute products, bargaining power of buyers and bargaining power of suppliers (Porter, 1980). It is common for each sector to compete at a certain rate. The intensity of competition in some sectors may be higher/lower than other sectors. The strength and determination of competition in any sector depend on the competition between existing businesses, the threat of new businesses that may enter the market, the threat of the businesses producing the products in the market, the bargaining power of the buyers and the bargaining power of the suppliers (Arslan, 2012). These five key forces determine the state of competition in the sector, and the sum of these forces determines the final profit and the intensity of competition in the sector. These forces are weaker in sectors where higher yields are in mention, and these powers are more intense in sectors where returns are reduced (Aktan and Vural, 2004).

Businesses that are new to the market always pose a threat to existing businesses. While the businesses can directly predict the threats of existing competitors, businesses in other sectors are not expected to enter the market and thus encountering such a situation poses a threat to the business (Arslan, 2012). Competition is expected to be high in sectors where potential competitors can easily enter. Therefore, there may be an increase in competition in the sectors that do not have any entry barriers.

If the competition between businesses operating in an industry is low, businesses have the opportunity to increase prices and make more profits. In other words, strong competition between businesses active in a sector poses an important threat to profitability (Aktan and Vural, 2004).

In general, all businesses in a sector compete with sectors that produce substitute products. Substitute products limit the potential returns of the sector by setting an upper limit on the prices that businesses in the sector can profitably determine. The more attractive the price/performance ratio offered by substitute products, the greater the threat to sector profits (Porter, 2000). Substitute products are different products that satisfy the same need. Therefore, they are alternative products that

offer the same performance and benefit to consumers. For example, while e-mails are substitutes for fax machines, bottled water is a substitute for coke (Wheelen and Hunger, 1995). To achieve better quality and price, consumers may be in search of products that are in different sectors but offer the same benefits. In such a case, it poses a threat to businesses in the sector (Arslan, 2012).

The fact that when buyers are strong, it causes prices to fall (purchase costs), increase in quality, increase in service expectations and demands and create challenge among competitors (Pearce and Robinson, 2009). Buyers compete in the industry by forcing others to lower their prices, negotiate for better quality and more services, and cause higher rivalry among competitors. The strength of each of the important buyers of the sector depends on the characteristics of the market situation and the importance of - shopping with the sector in proportion to the total volume of business.

Increasing the prices of suppliers in a sector or threatening to reduce the quality of the purchased product or service indicates the strength of the supplier in that sector (Porter, 2000; Pearce and Robinson, 2009). In this way, strong suppliers reduce the profitability of a sector that cannot meet cost increases with their prices.

Aquaculture is defined as the animal (fish, crustaceans, and arthropods) and herbal (algae) aquatic organisms under controlled or semi-controlled conditions for human food, stock supplementation, ornamental, sportive and scientific purposes (Çelikkale et al. 1999). The marine aquaculture in Turkey has begun between 1974 and 1978 but has not been successful because of investors not having sufficient capital and knowledge, infrastructure difficulties, difficulties in supplying feed, credit, and fry. In 1985, Pınar Marine Products I.C established an integrated aquaculture facility and started production of sea bream and sea bass (Anonymous, 1988). The marine fish aquaculture sector in Turkey began to grow in the 1990s and gained momentum. Marine aquaculture in Turkey is made in two different environments, land-based and floating cages (Şahin, 1995).

In Turkey, the number of Marine aquaculture enterprises reached 427 in 2015 from 87 enterprises in 1994 and the production capacity has reached - 236 964 tons. Over the past decade, the types of produced fish have also increased including rainbow trout and tuna aquaculture (Anonymous, 2016). Sea bass (*Dicentrarchus labrax*, Linnaeus, 1758), sea bream (*Sparus aurata*, Linnaeus, 1758), and rainbow trout (*Oncorhynchus mykiss*, Walbaum, 1792) are the species predominantly produced in the seas of Turkey.

When national and international literature is reviewed, studies such as Bjorndal and Aarland (1999); Bjorndal (2001); Asche et al. (2005); Hidaka and Torii (2005); Felzensztein and Carter (2006); Bostock et al. (2008); Norman-Lopez and Asche (2008); Teweldemedhin (2008); Browdy and Hargreaves (2009); Norman-Lopez (2009) are highly related with the main subject of this paper. In these studies, especially the competitiveness potential of countries or sectors have been evaluated. For this reason, this study is one of the first studies focusing on competitive factors in aquaculture in both national and international literature. This study aims to examine how employees perceive the competitive factors of the sector in terms of the institutions involved in the marine fish sector, particularly in the aquaculture sector. The research conducted within the scope of this aim fills an important gap both in literature and in practice by being the first study in the field of aquaculture in Turkey.

MATERIALS and METHODS

There are no studies in literature focusing on dynamics of competition in the marine fish aquaculture sector. Therefore, in this study a descriptive research method was used, which may be defined as a type of research that describes the properties of the population or phenomenon that is being studied (Gegez, 2005). Data for the study was collected using a scale on factors that may create competition in the marine fish aquaculture indurstry which was developed by the authors of this study. The universe of the study is all of the major parties that make up the marine aquaculture industry in Turkey; namely, business managers who produce marine fish aquaculture, business managers who operate marine fish, business managers who produce marine fish-feed, academicians, ministry or provincial directorate workers, fish purchasing managers of organized retail businesses, etc. The sample frame consisted of managers/employees who had enough knowledge about the sector so that they were able to answer the survey. Since the managers/employees who make up the frame of sample are in different institutions and dispersed to different geographic regions of Turkey, a consistent sample frame could not be formed. Therefore, only the people from the universe who could be reached

were asked to complete the survey. The survey was conducted on 344 people who could be reached and who agreed to participate in the study. The sampling method used in the study was judgmental sampling, which is a non-random sampling method. Judgmental sampling can be defined as the determination of the individuals to be included in the sample by the researcher according to his judgment that they are representative of the universe (Gegez, 2005). In this study, it was preferred to include people who were considered as having sufficient knowledge about the the sector so that they could answer the questions included in the scales and who accepted to participate.

To increase the validity of the survey, the prepared survey form was sent to academicians who are experts in the field and related persons in the field and required adaptations were made to fit the marine fish aquaculture sector.

The main hypothesis developed for the study is: "H_1: There is a difference in the perception of dynamics of competition according to the different parties that operate in the marine aquaculture sector". The survey method was preferred as the method of data collection in the study. Since the respondents were dispersed in different geographic regions of Turkey, the surveys were collected by not only using face-face method but also by using online and e-mail data collection methods (Table 1). As different data collection methods were used it was necessary to check whether there was a method effect in the data collected before performing any analysis. For this reason, ANOVA was used to test whether there were any statistically significant differences according to the different data collection methods. The results showed that there were no statistically significant differences among the different data collection methods ($p>0.05$). In the research, reliability analysis, frequency distributions, central tendency measurements were calculated. Also, to test whether there were any differences in responses according to the different parties in the industry, ANOVA was used. All analyses were conducted using SPSS 17.0 program.

Table 1. Methods of data collection

Data collection method	Frequency	Percentage (%)
Face to face	140	40.70
Online	109	31.70
e-mail	95	27.60
Total	344	100.00

RESULTS

When the age distribution of the respondents is examined, it is seen that 43.02% are between 35-44 years of age, 14.83% are between 25-34 years and 11.05% are between 55-65 years of age (Table 2).

It is seen that 86% of them are male- when looked at the gender distribution (Table 3). The reason for the low number of female employees among the participants is due to the fact that women prefer to work in the aquaculture field less than men because of the heavy working conditions.

Table 2. Age distribution of respondents

Ages (Year)	Frequency	Percentage (%)
25-34	51	14.83
35-44	148	43.02
45-54	107	31.10
55-65	38	11.05
Total	344	100.00

When the distribution of the sample according to experience is examined, it is seen that 35.47% of the distribution is between 11-20 years, 28.78% is between 1 to 10 years and 5.23% is 31-40 years of

experience (Table 4). Although aquaculture activity in Turkey has been carried out for 46 years, marine fish aquaculturing is relatively new and has only been performed for 30 years. For this reason, those who have more than 30 years of experience in the sector are highly experienced in aquaculture.

Table 3. Gender distribution of respondents

Gender	Frequency	Percentage (%)
Female	48	14.00
Male	296	86.00
Total	344	100.00

Table 4. Experience time distribution of respondents

Experience time (Year)	Frequency	Percentage (%)
1-10	99	28.78
11-20	122	35.47
21-30	103	29.94
31-40	18	5.23
41-50	2	0.58
Total	344	100.00

In the distribution according to their workplaces, it is seen that 54.07% of the participants are producers, 14.54% are academicians and 6.98% are employees of ministerial and provincial directorates (Table 5).

Table 5. Distribution of respondents according to their institution

Institution	Frequency	Percentage (%)
Producer	186	54.07
Fish processing enterprises	15	4.36
Feed enterprises	15	4.36
Ministry and provincial directorate	24	6.98
Academician	50	14.54
Retail enterprise	20	5.81
Research institute	14	4.07
Supplier	20	5.81
Total	344	100.00

According to their educational status, 41.57% of the participants has a bachelor's degree, 27.32% has doctoral education and 24.42% has a master's degree (Table 6). It was expected that the number of university graduates would be high because those working in the sector needs to at least complete an aquaculture engineer- or similar degree program to have sufficient knowledge to fulfill the industry requirements and the percentage of respondents with a doctoral degree is also high since 4.54% of the respondents are academicians.

Table 6. Educational status distribution of respondents

Education	Frequency	Percentage (%)
High school	23	6.69
Bachelor degree	143	41.57
MSc degree	84	24.42
PhD	94	27.32
Total	344	100.00

Initially factor analysis was applied to the dynamics of competition scale. Factor analysis is used to analyze the relationship between multiple variables. The purpose of factor analysis is to summarize the information collected from a large number of original variables and to create a new and fewer set of factors with the least information loss (Gegez, 2005). Before conducting factor analysis, the suitability of the data for factor analysis was tested by KMO (Kaiser-Meyer-Olkin) sample adequacy statistics and Bartlett's sphericity test (Table 7). Bartlett's sphericity test measures whether there is a sufficient correlation between variables. As a result of this test, if the p-value is below 0.05, it means that there is a relationship between the variables and the data are suitable for factor analysis. Also, the KMO value of 0.60 and above is also a measure of the fact that the data are suitable for factor analysis (Sipahi et al., 2006).

Table 7. Suitability for factor analysis of competition elements scale

KMO and Bartlett's Sphericity Test		
Kaiser-Meyer-Olkin Sample Adequacy Measure		0.68
Bartlett's Sphericity Test	Chi-Square	7071.57
	df	561
	Sig.	0.000

The KMO value was calculated as 0.68 and this value was above 0.60, which is the minimum sample adequacy measure, and it is determined that the sample size is suitable for factor analysis. As a result of Bartlett's Sphericity Test, the p-value was below 0.05 and it was found that there was sufficient relationship between variables. Based on these results, factor analysis was applied to the 48-item Dynamics of Competition scale. Factor analysis was repeated four times (Table 8) and the items with factor load below 0.50 were excluded from the analysis. Finally, factor analysis resulted in 11 factors with a total of 34 items. The total variance was 75.13%.

When the dynamics of competition are assessed for all of the respondents (Table 9), the sales price of the product consisting of a single item (mean= 4.79) is seen as the most important dynamic of competition. The following most important dynamic of competition is rapid product offer to the market (mean= 4.71), proceeded by financial power (mean= 4.58). The dynamic of competition that received the lowest score is proximity to suppliers (mean= 3.76).

Following the assessment of the whole sample, the sample was split according to the different parties that take place in the industry. The means of dynamics of competition according to the different parties are given in Tables 8-17.

According to the employees in the aquaculture businesses (Table 10), the most important dynamics of competition in the sector are the rapid product offer to the market (mean= 4.75), the sales price of the product (mean= 4.74), and financial power (mean= 4.63). The lowest scores for dynamics of competition are the proximity to the supplier (mean= 3.70), standards and promotion (mean= 3.83), and support and healthy product (mean= 3.87) factors.

The perception of the dynamics of competition by the academicians are given in Table 11.

According to the academicians, the most important dynamics of competition in the sector are the sales price of the product (mean= 4.84), rapid product offer to the market (mean= 4.72), and distribution and technology (mean= 4.66). The lowest scores for dynamics of competition are the standards and promotion (mean= 4.01), proximity to the supplier (mean= 4.07), and cost elements (mean= 4.09) factors.

The perception of the dynamics of competition by the employees of the ministry-provincial directorate are given in Table 12.

Table 8. Factor analysis results of dynamics of competition scale

Dimensions	Mean factor	Factor explanatory (%)	Number of items
Standards and promotion	3.88	12.63	6
Distribution and technology	4.49	10.08	5
Proximity to the supplier	3.76	7.19	3
Supports and healthy product	4.04	6.47	4
Product diversity, fishing season and retailer cooperation	4.26	6.32	3
Cost elements	4.10	6.31	3
Integration	4.05	5.92	2
Product possession	4.44	5.83	2
Rapid product offer to the market	4.71	5.48	3
Financial power	4.58	4.92	2
The sale price of the product	4.79	3.98	1
	Total	75.13	34

Table 9. Means of dynamics of competition factors for all respondents

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	3.88	0.990
2	Distribution and technology	4.49	0.720
3	Proximity to the supplier	*3.76*	0.882
4	Supports and healthy product	4.05	1.034
5	Product diversity, fishing season and retailer cooperation	4.26	0.805
6	Cost elements	4.10	0.882
7	Integration	4.06	0.867
8	Keeping finished product	4.45	0.642
9	Rapid product offer to the market	**4.71**	0.440
10	Financial power	**4.58**	0.624
11	The sale price of the product	**4.79**	0.409

The perception of the dynamics of competition factors by the employees in the aquaculture businesses is given in Table 10.

Table 10. Perception of the dynamics of competition factors by the employees in the aquaculture businesses

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	*3.83*	0.842
2	Distribution and technology	4.43	0.674
3	Proximity to the supplier	*3.70*	0.855
4	Supports and healthy product	*3.87*	0.868
5	Product diversity, fishing season and retailer cooperation	4.20	0.786
6	Cost elements	4.13	0.709
7	Integration	4.03	0.834
8	Keeping finished product	4.42	0.527
9	Rapid product offer to the market	**4.75**	0.207
10	Financial power	**4.63**	0.493
11	The sale price of the product	**4.74**	0.439

Table 11. Perception of the dynamics of competition factors by the academicians

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	*4.01*	0.747
2	Distribution and technology	**4.66**	0.351
3	Proximity to the supplier	*4.07*	0.680
4	Supports and healthy product	4.29	0.547
5	Product diversity, fishing season and retailer cooperation	4.25	0.733
6	Cost elements	*4.09*	0.788
7	Integration	4.40	0.685
8	Keeping finished product	4.38	0.836
9	Rapid product offer to the market	**4.72**	0.377
10	Financial power	4.34	0.738
11	The sale price of the product	**4.84**	0.370

Table 12. Perception of the dynamics of competition factors by the employees of ministry-provincial directorate

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	4.11	0.603
2	Distribution and technology	**4.37**	0.448
3	Proximity to the supplier	*3.50*	0.780
4	Supports and healthy product	4.25	0.489
5	Product diversity, fishing season and retailer cooperation	4.33	0.341
6	Cost elements	*3.83*	0.805
7	Integration	*3.92*	0.545
8	Keeping finished product	4.33	0.482
9	Rapid product offer to the market	4.28	0.746
10	Financial power	**4.58**	0.351
11	The sale price of the product	**4.67**	0.482

According to the employees of the ministry-provincial directorate, the most important dynamics of competition in the sector are the sales price of the product (mean= 4.67), financial power (mean= 4.58), and distribution and technology (mean= 4.37). The lowest scores for dynamics of competition are the proximity to the supplier (mean= 3.50), cost elements (mean= 3.83), and integration (mean= 3.92).

The perception of the dynamics of competition factors by the employees in the feed producer businesses is given in Table 13.

Table 13. Perception of the dynamics of competition factors by the employees in the feed producer businesses

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	*4.03*	0.649
2	Distribution and technology	4.52	0.426
3	Proximity to the supplier	*3.73*	0.402
4	Supports and healthy product	4.25	0.634
5	Product diversity, fishing season and retailer cooperation	4.20	0.602
6	Cost elements	4.40	0.768
7	Integration	*3.90*	0.507
8	Keeping finished product	**4.70**	0.414
9	Rapid product offer to the market	**4.67**	0.378
10	Financial power	4.60	0.507
11	The sale price of the product	**5.00**	0.000

According to the employees in the feed producer businesses, the most important dynamics of competition in the sector are the sales price of the product (mean= 5.00), keeping the finished product (mean= 4.70), and rapid product offer to the market (mean= 4.67). The lowest scores for dynamics of competition are the proximity to the supplier (mean= 3.73), integration (mean= 3.90), and standards and promotion (mean= 4.03).

The perception of the dynamics of competition factors by the employees in the seafood processing businesses is given in Table 14.

Table 14. Perception of the dynamics of competition factors by the employees in the seafood processing businesses

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	4.28	0.215
2	Distribution and technology	4.40	0.169
3	Proximity to the supplier	*3.78*	0.163
4	Supports and healthy product	4.42	0.440
5	Product diversity, fishing season and retailer cooperation	4.56	0.325
6	Cost elements	*3.89*	0.430
7	Integration	*3.67*	0.488
8	Keeping finished product	**4.67**	0.244
9	Rapid product offer to the market	**4.67**	0.000
10	Financial power	4.33	0.488
11	The sale price of the product	**4.67**	0.488

According to the employees in the seafood processing, the most important dynamics of competition in the sector are the sales price of the product (mean= 4.67), keeping the finished product (mean= 4.67), and rapid product offer to the market (mean= 4.67). The lowest scores for dynamics of competition are the integration (mean= 3.67), proximity to the supplier (mean= 3.78), and cost elements (mean= 3.89).

The perception of the dynamics of competition factors by the employees in the retail businesses is given in Table 15.

Table 15. Perception of the dynamics of competition factors by the employees in the retail businesses

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	*3.73*	0.617
2	Distribution and technology	**4.76**	0.201
3	Proximity to the supplier	*3.67*	0.530
4	Supports and healthy product	4.15	0.384
5	Product diversity, fishing season and retailer cooperation	4.20	0.634
6	Cost elements	4.33	0.216
7	Integration	*3.80*	0.410
8	Keeping finished product	4.60	0.384
9	Rapid product offer to the market	4.73	0.399
10	Financial power	**4.90**	0.205
11	The sale price of the product	**5.00**	0.000

According to the employees of retail businesses, the most important dynamics of competition in the sector are the sales price of the product (mean= 5.00), financial power (mean= 4.90), and distribution and technology (mean= 4.76). The lowest scores for dynamics of competition are the proximity to the supplier (mean= 3.67), integration (mean= 3.73), and standards and promotion (mean= 3.80).

The perception of the dynamics of competition factors by the employees in the supplier businesses is given in Table 16.

Table 16. Perception of the dynamics of competition factors by the employees in the supplier businesses

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	3.53	0.783
2	Distribution and technology	4.44	0.154
3	Proximity to the supplier	4.20	0.274
4	Supports and healthy product	4.05	0.523
5	Product diversity, fishing season and retailer cooperation	4.33	0.306
6	Cost elements	3.80	0.768
7	Integration	4.20	0.251
8	Keeping finished product	4.40	0.503
9	Rapid product offer to the market	4.73	0.256
10	Financial power	4.70	0.251
11	The sale price of the product	4.80	0.410

According to the employees in the supplier businesses, the most important dynamics of competition in the sector are the sales price of the product (mean= 4.80), financial power (mean= 4.70), and rapid product offer to the market (mean= 4.73). The lowest scores for dynamics of competition are the standards and promotion (mean= 3.53), cost elements (mean= 3.80), and support and healthy product (mean= 4.05).

The perception of the dynamics of competition factors by the employees in the research institutes is given in Table 17.

Table 17. Perception of the dynamics of competition factors by the employees in the research institutes

Factor Nr	Factors	Mean	*SD*
1	Standards and promotion	3.86	0.637
2	Distribution and technology	4.57	0.133
3	Proximity to the supplier	3.48	0.609
4	Supports and healthy product	4.32	0.267
5	Product diversity, fishing season and retailer cooperation	4.62	0.221
6	Cost elements	4.24	0.821
7	Integration	4.07	0.852
8	Keeping finished product	4.50	0.480
9	Rapid product offer to the market	4.76	0.156
10	Financial power	4.43	0.514
11	The sale price of the product	5.00	0.000

According to the employees in the research institutes, the most important dynamics of competition in the sector are the sales price of the product (mean= 5.00), rapid product offer to the market (mean= 4.76) and product diversity, fishing season and retailer cooperation (mean= 4.62). The lowest scores for dynamics of competition are the proximity to the supplier (mean= 3.48), standards and promotion (mean= 3.86), and integration (mean= 4.07).

The answers of the respondents to the dynamics of competition were evaluated together in a single table (Table 18).

Table 18. Factors' means by business type

Factors/ Business type	1	2	3	4	5	6	7	8	9	10	11
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
Aquaculture	3.83	4.43	3.70	3.87	4.20	4.13	4.03	4.42	4.75	4.63	4.74
Academician	4.01	4.66	4.07	4.29	4.25	4.09	4.40	4.38	4.72	4.34	4.84
Ministry-Provincial Directorate	4.11	4.37	3.50	4.25	4.33	3.83	3.92	4.33	4.28	4.58	4.67
Feed producer	4.03	4.52	3.73	4.25	4.20	4.40	3.90	4.70	4.67	4.60	5.00
Seafood processing	4.28	4.40	3.78	4.42	4.56	3.89	3.67	4.67	4.67	4.33	4.67
Retailer	3.73	4.76	3.67	4.15	4.20	4.33	3.80	4.60	4.73	4.90	5.00
Supplier	3.53	4.44	4.20	4.05	4.33	3.80	4.20	4.40	4.73	4.70	4.80
Reseasrch institute	3.86	4.57	3.48	4.32	4.62	4.24	4.07	4.50	4.76	4.43	5.00

The employees in the aquaculture businesses consider standards and promotion (mean= 4.28) and support and healthy product (mean= 4.42), while the employees in the retail businesses consider the sales price of the product (mean= 5.00), financial power (mean= 4.90) and distribution and technology (mean= 4.76) factors, the employees in the supplier businesses consider proximity to the supplier (4.20), the employees in the research institutes consider the sales price of the product (mean= 5.00), rapid product offer to the market (mean= 4.76) and product range, fishing season and retailer cooperation (mean= 4.62), the employees in the feed producer businesses consider cost elements (mean= 4.40), keeping finished product (mean= 4.70) and the sales price of the product (mean= 5.00) and the academicians consider integration (mean= 4.40) as the most important dynamics of competition.

The main hypothesis of the study as; "H_1: There is a difference between the employees work in the sector and their perception of competition elements" was tested with ANOVA. The result of ANOVA "H_0: There is no difference between the employees work in the sector and their perception of competition elements" hypothesis was accepted ($p>0.05$, Sig:0.303). The mean of the respondents given to the competitive elements scale did not differ according to the employees' work in the sector was determined.

CONCLUSION and IMPLICATIONS

Aquaculture in Turkey has been carried out for nearly 50 years, while the marine fish aquaculture is being performed for nearly 30 years. It can be said that it was not difficult for businesses to sell their products in the first few years since the number of businesses was quite limited, the amount of production was not high and the demand was enough to meet the production. In parallel with the developments in technology businesses obtained more efficiency operating in their current sized areas. Following the increase in the productivity of the businesses, the production amounts are increasing year by year (Anonymous, 2013a; Anonymous, 2013b; Anonymous, 2014a). With the increase in production, competition among businesses is also increasing. The competition among the existing businesses is intensely felt due to the reasons of having a greater number of businesses in the aquaculture sector, the supply-demand balance cannot string out to the whole year, the low market growth rate in Turkey on the consumer side and the fact that the products produced are relatively standard and there is no differentiation in the subjects of a brand, etc.

Considering the sector as a whole, the most important dynamics of competition were determined as **'the sales price of the product', 'rapid product offer to the market',** and **'financial power'**. When the evaluation is made according to the different parties, the producer businesses perceive **'the sales price of the product', 'rapid product offer to the market',** and **'financial power'** as the most important dynamics of competition as compared to supplier businesses.

According to the academicians, **'the sales price of the product', 'rapid product offer to the market',** and **'distribution and technology'** are the most important dynamics of competition in the sector. According to the employees of the ministry-provincial directorate, **'the sales price of the product', 'financial power',** and **'distribution and technology'** are the most important dynamics of competition in the sector. According to the aquaculture and feed producer businesses, **'the sales price of the product', 'keeping finished product',** and **'rapid product offer to the market'** are the most important dynamics of competition in the sector. According to the retail businesses, **'the sales price of the product', 'financial power',** and **'distribution and technology'** are the most important dynamics of competition in the sector. According to the employees in the research institutes, **'the sales price of the product', 'rapid product offer to the market'** and **'Product Range, Fishing Season and Retailer Cooperation'** are the most important dynamics of competition in the sector.

As a result, the dynamics of competition that stand out in the marine fish aquaculture sector are the sales price of the product, rapid product offer to the market, and financial power.

Acknowledgments: This article was extracted from a Ph.D.'s thesis conducted at the Institute for Social Sciences, Marmara University. This thesis was supported by Marmara University, Scientific Research Projects Committee (Project Nr. SOS-C-DRP-210311-0074, 2011). This study was presented in the European Association of Fisheries Economist (EAFE) Conference 2019 (02-04 April 2019, Santiago de Compostela, Spain). This presentation was supported by Marmara University, Scientific Research Projects Committee (Project Nr. FEN-D-130319-0078).

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