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ARAŞTIRMA MAKALESİ **RESEARCH ARTICLE**

Fishery products processing facilities and the socio-economic structure of their employees in Türkiye: A sectional study from Istanbul

Su ürünleri işleme tesisleri ve çalışanlarının sosyo-ekonomik analizi: İstanbul ili örneği

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ABSTRACT

In this study, both the business structure and the socio-economic structures of the employees in 13 active aquaculture processing plants operating in Istanbul were examined and it was aimed to reveal the data in social and economic terms. In the study, a 24-question questionnaire for employees and a 15-question questionnaire to evaluate the business structure were presented. It was seen that 52% of the employees were men and 48% were women and 34.29% were in the 31-40 age range. It was found that 73.14% of the respondents were married and most of them lived in apartments under 120m2. In the multiple compliance analyzes, it was determined that there was a relationship between education level and the number of social media uses, and between monthly income and job satisfaction. It was determined that 31% of the 13 enterprises in the study had an export permit and that the HACCP system was applied in all of them. It was seen that only 38% of the enterprises received state support. The problems and solution proposals of the sector are also put forward in titles. Turkey's aquaculture sector and the processing plants connected to this sector are very important in economic terms. With the two different survey applications used, both a different perspective on employee data and important data on general problems within the scope of the facility were revealed. When the importance of Istanbul and the aquaculture processing sector is considered, the originality of the study is revealed.

ÖZET

Bu çalışmada, İstanbul İlinde faaliyet gösteren 13 adet faal su ürünleri işleme tesislerinde hem işletme yapısı hemde çalışanların sosyo-ekonomik yapıları incelenmiş, toplumsal ve ekonomik açıdan verilerin ortaya koyulması amaçlanmıştır. Çalışmada, çalışanlara yönelik 24 soruluk, işletme yapısını değerlendirmek için 15 soruluk bir anket sunulmuştur. Çalışanların %52'lik kısmını erkeklerin %48'lik kısmını ise kadınların oluşturduğu ve %34,29'luk oranın 31-40 yaş aralığında olduğu görülmüştür. Ankete katılanların %73,14'nün evli ve çoğunun 120m^2 altındaki apartman dairelerinde oturduğu tespit edilmiştir. Çoklu uyum analizlerinde eğitim düzeyi ile sosyal medya kullanım sayısı arasında ve aylık gelir ile iş memnuniyeti arasında ilişki olduğu belirlenmiştir. Çalışmada yer alan 13 adet işletmenin %31'inin ihracat izninin olduğu ve tamamında HACCP sisteminin uygulandığı belirlenmiştir. İşletmelerin sadece %38'inin devlet desteği aldığı görülmüştür. Sektörün sorunları ve çözüm önerileri de başlıklar halinde ortaya koyulmuştur. Türkiyenin su ürünleri sektörü ve bu sektöre bağlı işleme tesisleri ekonomik anlamda oldukça önemlidir. Kullanılan iki farklı anket uygulaması ile hem çalışan verilerine dair farklı bir bakış açısı hemde tesis kapsamında genel sorunlara dair önemli veriler ortaya koyulmuştur. İstanbul ilinin ve su ürünleri işleme sektörünün önemi düşünüldüğünde çalışmanın özgünlüğü ortaya çıkmaktadır.

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INTRODUCTION

Aquaculture is one of the important industrial areas with its economic structure in the agricultural sector. Aquaculture has an important place in the socio-economic field both as a valuable source of nutrition and in terms of the business line. Fishery products contribute significantly to the economy of our country with many activities such as providing raw materials to the industrial sector, contributing to rural development, creating employment areas and food production (Doğan & Yıldız, 2008). According to FAO's 2019 figures, the annual aquaculture production amount all over the world is 177.8 million tons. Approximately 92.5 million tons of this production were provided by hunting and 85.3 million tons were provided by cultivation. 61.04 million people are reported to be active in this large sector (FAO, 2019). Aquaculture production in Turkey in 2020 amounted to 785.811 tons. The economic value of total production was 13.7 bilion TL. Export figures provided an added value of 1.06 bilion dollars to the country's economy with 201.157 tons (BSGM, 2021; Anonymous, 2020).

Aquaculture processing facilities must obtain a production permit within the scope of Law No. 5996, and thosethat receive permission are registered in the Food Safety Information System. Turkey's only processed animal product group with export approval to the European Union includes aquatic products; however, socio-economic analyses on the processing sector and its employees are quite limited. Studies have been conducted on aquaculture sector workers, business owners and consumer groups, mostly in the fisheries sector, at home and abroad by various researchers such as Drewes (1982), Charles (1988), Hunte & Oxenford (1989), Saxena (1989), Supongpan et al. (2000), Yahşi (2000), Villareal et al. (2004), Freire & Garcia-Allut (2000), Waters et al. (2001), Sabatella & Franquesa (2003), Ünal (2004), Tezcan (2005), Çolakoğlu et al. (2006), Uzmanoğlu & Soylu (2006), Yücel (2006), Emre et al. (2007), Güngör et al. (2007), Kutlu & Balçık-Mısır (2007), Çeliker et al. (2008), Doğan & Yıldız (2008), Bektaş et al. (2010), Doğan (2010), Köse et al. (2010), Çağlak et al. (2012), TSÜMAE (2012), Sarıözkan (2016), Buruç (2018), Çaylak et al. (2019). In aquaculture processing facilities, by increasing the shelf life and quality of the products by using various processing technologies, many products with different flavors and characteristics are offered to the consumers. The protection of the quality of the products in the processing, storage and marketing stages of aquatic products, which have become more important recently, is one of the leading issues in our country as well as all over the world. Istanbul, which is considered to be among the largest and most populous cities not only in our country but also in the world with a population of about 15 million, is a metropolis along the shores of the Sea of Marmara and the Bosphorus, which serves as a bridge between Europe and Asia. The fact that Istanbul's aquaculture market dates to ancient times in the past is demonstrated by the example of 17 akçelik aquaculture products being taken to the palace every day during the reign of Fatih Sultan Mehmet (Atay, 1997; Robust et al., 2008; Dogan, 2010; Uzbek, 2014; Solid, 2017).

Considering the current location and importance of the province of Istanbul where the study was conducted, it is seen how important the study is. The 13 active aquaculture facilities surveyed in Istanbul account for approximately 7% of the aquaculture products processed throughout Turkey. Similar studies have been carried out on Aquaculture Processing Facilities in Istanbul, but no studies have been identified to reveal the socio-economic profiles of the facility employees. In this study, it is aimed to obtain qualitative social data by revealing the socio-economic structures of the employees of the processing sector, which stands out with the economic contributions of Istanbul, which has an important potential in terms of aquaculture. In addition, it is foreseen that the research findings will give ideas to employers, sector managers and policy-making institutions for the aquaculture processing sector. In this way, it is expected that the number of processing facilities in our country will increase more, reach the desired quality and level, and contribute more to the country's economy and employment staff by producing healthier and higher quality products.

MATERIALS and METHODS

Research area

In terms of Aquaculture Processing Industry and Fisheries, Istanbul province located in the Marmara region, which has a significant potential in Turkey, was selected as a research area. The research period covered the years 2018-2019. Istanbul Provincial Directorate of Agriculture and Forestry established thirteen (13) aquaculture processing facilities, and their employees research material in the Food Safety Information System. Crustaceans, Head Legged, Fresh Chilled and Frozen Aquaculture are the working areas of the processing facilities.

Survey form and application method

Two separate questionnaires were used in the study. The first questionnaire included 21 questions for facility employees and the second one included 15 questions for the structure of processing facilities. For this purpose, surveys of previous socio-economic studies were rearranged and used, as well as creating up-to-date surveys for facilities (Bektaş et al., 2010; Dogan, 2010; Doğan & Yıldız, 2008; Çağlak et al., 2012). Full counting method was used to obtain healthy and reliable data about the enterprises. Full counting can be used in survey studies if the questionnaire is applied individually and completely in the entire audience where the study is carried out (Çapkın et al., 2008). The 175 participants surveyed included all personnel working in all processing facilities. Questions in the questionnaires regarding the socio-economic and demographic status of the employees covererd data on age, marital status, household population, education level, social security status, income they receive, satisfaction with their profession, social-cultural activities and food expenditures. Questions in the questionnaires regarding the structure, characteristics and due diligence of the processing facilities covered data such as the name-address of the facility, the place-year of establishment, capacity, the number of personnel, the products processed, the problems encountered, and government supports.

Statistical evaluation

The results obtained in the analysis of the research data were analyzed by transferring them to the Windows Office 365 program. The answers in the questionnaire forms were calculated as frequency and percentage distributions using the MS Excell program, and the findings were presented in tables. The results were recorded by performing correlation analysis in MS Office Excell program, then finally multiple compliance analysis was performed using XLSTAT program (Multiple Correspondence Analysis), and the results were evaluated within the framework of graphs (Keskin, 2001).

RESULTS and DISCUSSIONS

In this study, the results of the socio-economic data of the people working in the aquaculture processing facilities in Istanbul and the analysis results of the facility structures were revealed. In the determination and evaluation of the survey data applied to the employees, it has been determined that the enterprises in Istanbul are distributed in Eyüp, Sarıyer, Beykoz, Esenyurt, Bayrampaşa, Beşiktaş, Çekmeköy, Sancaktepe and Şile districts. it was determined that all of the business structures (100%) were company enterprises. It is stated by Çapkın et al. (2008) that all but one of the 10 aquaculture processing plants operating in the Beyşehir region are under the management of the company. In the study conducted on aquaculture processing facilities in Balıkesir, it was revealed that a total of eight enterprises were all under the management of the company (Çağlak et al., 2012). As seen in this research and other studies, it has been determined that the management of aquaculture processing facilities is generally operated as a company.

When the processing technologies of the enterprises in the region are examined, the sea, freshwater fish and cephalopods processing facilities (11 units) have formed the vast majority. Another enterprise has been identified as facilities that process bivalve mollusks, and another as plants that process lobster. In the study conducted by Çağlak et al. (2012) in which they examined the aquaculture processing facilities in Balıkesir, it was stated that the technologies of processing fresh and frozen aquaculture, head-legged and shelled products were at the forefront. In the same study, it was stated that there were also bivalve softcam processing techniques, albeit to a lesser extent. When these two studies were compared, similarities were observed in the processing of fresh and frozen aquatic products and head-legged and shell products in most of the enterprises. In the examination of the number of employees, it was determined that 9 enterprises employed 1-16 personnel, 3 enterprises employed 17-25 personnel, and 1 enterprise employed 26-41 personnel. Duyar and Bayraklı (2005) stated that in the study titled "The Situation, Problems and Solution Proposals of Aquaculture Facilities in Sinop", 1-11 personnel were employed at a rate of 50% as a result of the evaluation made over 89 permanent personnel in 6 enterprises. In the study conducted on 8 aquaculture processing facilities and 120 personnel in Balıkesir, they reported the rate of 5 enterprises employing 1-11 personnel as 62.5% (Çağlak et al., 2012). When compared with the studies conducted, it is seen that the distributions in the proportions of facilities employing less than 17 personnel in aquaculture processing plants are similar. Data on the demographic structure of employees are shown in Table 1. As a result of the research, it was determined that 91 of the 175 personnel working in aquaculture processing plants were men and 84 were women. In the studies conducted by Çapkın et al. (2008) and Çağlak et al. (2012), it was stated that the number of female employees was higher. The difference seen with the studies is that male employees work in fresh and frozen seafood processing areas that require more strength and durability, while female employees work in fillet extraction, shell processing and processing technologies that require precision in terms of hand predisposition. The fact that the fresh and frozen aquaculture processing sector is more prominent throughout the province explains this difference. It was determined that 66.85% of the employees of the processing facilities in the province consisted of personnel in the age groups of 40 years and under. When the research on the aquaculture sector is examined, it is revealed that the general personnel age distribution is 40 years and younger employees (Çağlak et al., 2012; Tokaç & Dinçer, 2011; Çapkın et al. 2008; Doğan & Yıldız, 2008; Emre et al., 2007; Yucel, 2006). In the final declaration of the family symposium in the drifting world made by SEKAM (2011), it is stated that the basis of the social structure of our country is based on family and marriage. According to the United Nations 2000 data, it is stated that 90% of men and women are married in all countries of the world (Anonymous, 2014). When Turkey's civil statistical data are examined by Anonymous (2021), it is stated that the marriage rate in Istanbul is 46% and the bachelorhood rate is 23%. In the results of the survey, it was determined that 73.14% of the employees were married, 25.71% were single and 1.15% were widowed. Within the scope of the final declaration of the symposium and anonym data, it was observed that the employees of the sector gave importance to the family structure and revealed similar marital status rates. In the studies conducted Çağlak et al. (2012; 2018) on aquaculture processing facilities and Rize aquaculture sales places in Balıkesir, marriage rates were similarly found to be above the level of 70%. In anonymous's 2020 data, it was stated that 25.16% of those living in Istanbul were primary school graduates, 45.1% were secondary school (including high school) graduates, 20.83% had an associate or bachelor degree, and 2.76% had a postgraduate degree (Anonymous, 2021). When our research results were examined (secondary education > primary education > undergraduate > not literacy > associate degree > master's degree), rates similar to anonim data were determined in the training status of aquaculture sector employees. In the study conducted by Çağlak et al. (2012) on the employees of aquaculture processing facilities in Balıkesir, the rate of those who had a bachelor or postgraduate degree undergraduate was found to be 14% by showing similarity with these study data. When the statistics of the printed media are examined, it is stated that there are decreases in the circulation of newspapers and magazines (Anonymous, 2017). In the study conducted by Çakır et al. (2009), they stated that the rate of those who irregularly read local newspapers in Kayseri province was 28.9% and the rate

of those who read a few days a week was 9.4%. Those who read newspapers once a month according to the answers given by the employees of the aquaculture processing facilities in Istanbul have the highest rate with 34.86%, revealing that the rate of reading newspapers has decreased, as seen in other studies. In the United Nations Human Development Report, Turkey ranks 86th in the ranking of reading books. In this respect, the frequency of reading books in Turkey is at very low rates and the supporting results are also seen in the rates of answers given to the question of reading books in Table 1. According to the report of the Reading Culture Survey in Turkey, in a survey conducted by a research company in 2008, 70 percent of the participants stated that they did not read books clearly, while in the new research they stated that this rate decreased to 36 percent (Okuyay, 2019). In the study conducted by Çoban et al. (2018) on the reading habit of university students, they stated that the rate of those who read 1-5 books in the last year was 48%. Çağlak et al. (2012) stated that the rate of those who read no books among the employees of the aquaculture processing facilities in Balıkesir province was 46% and the rate of those who read more than 1 book per month was 15%. The results of our research on the employees of aquaculture processing facilities in Istanbul are found to be similar to the results of other researches (30.85% who never read books, 26.86% once a week, 42.29% once a year and more than once) reflect Turkey's habit of reading books. However, recent studies and the results of this research also reveal that reading habits tend to increase in a positive way. The fact that the use of the internet, which has positive aspects as a very effective source of information and news, offers uncontrolled information and creates addiction, which are its negative features. Internet addiction is generally explained as spending a long time on the internet and not being able to control internet use (Leung, 2004; Simkova & Cincera, 2004). The biggest factor in internet addiction being a symptom of the time spent on the internet is that the weekly or daily usage time of the users who are addicted to the internet is much higher than the non-addicted users (Coa & Su, 2007). According to the August 2016 data of the Turkish Statistical Institute, while the rate of households providing internet access in Turkey is reported as 76.3%, the internet usage rate is determined as 61.2% (Anonymous, 2016). In the research conducted by Durak & Seferoğlu (2016), they stated that the average daily internet usage time was 4 hours and 37 minutes with PC and tablet and 2 hours and 51 minutes with mobile phone. The daily internet usage of 54.86% of the employees of the aquaculture processing facilities was determined as 2-3 hours. When the 2013 data of anonymous were examined, it was stated that the usage rates of the internet for participation and follow-up in social media networks were 73.2%, and this rate reached 82.4% in 2016 data. In this study, the rate of those who have a social media account was determined as 68.57%, and it is estimated that this difference, which is lower than the average in Turkey, is due to age distribution and education status. It was found that the majority of the social media users (53.72%) had one and two accounts and the rate of those who used more than 3 accounts was 14.85%. In the studies conducted by Aydın (2016) and İnce & Koçak (2017), it was stated thatmore than one social media uses. In the answers given to the question about the reason for internet use, communication with friends took the first place proportionally (54.22%). The option was followed by doing research, watching video-music and reading news, respectively. In the research conducted by anonymous in 2016, similar results were obtained in social media, sending messages to friends, watching videos, reading online news newspapers magazines, and searching for health-related information (Anonymous, 2021). As a result of the survey studies, it was determined that the frequency of internet use, the use and number of social media usage and the reasons for internet use were compatible with other studies and anonim data. In addition, it is determined that employees are not in a perception of internet addiction, mostly use one and two social media accounts, and the internet is within the scope of communication with friends and reading news. The correlation coefficient, which varies between -1 and +1, is a value that measures the degree of linear relationship between two variables. In correlation calculations made by taking the number of samples that can be considered normal according to the main mass, usually for r, it is said that 0.00-0.25 is a very weak relationship, 0.26-0.49 is a weak relationship, 0.50-0.69 is a medium relationship, 0.70-0.89 is a high relationship, and 0.90-1.0 is a very high relationship. The fact that r is greater than 0.7 as an absolute value allows us to interpret that the linear relationship is strong (Karataş, 2014).

When the gender distribution-education status of the employees was examined as a result of the correlation analysis, it was noted that there was a negative relationship between the two variables with r = -0.02 value. When the correlation between the frequency of reading books and monthly income was examined in the analysis results (0.12), it was seen that there was a very weak relationship between them. When the correlation between education status and frequency of internet use was analyzed, it was found that r = -0.6 and that there was a negative relationship between them. When correlation analysis was performed on the data of education status and frequency of reading newspapers, it was determined that r = -0.3 and there was a negative relationship between them. When the correlation analysis was made between the number of social media accounts and the frequency of internet use, it was found that r = 0.08 and it was observed that there was a very weak relationship between them. When the correlation rate between education status and the frequency of reading books was examined, it was recorded that the result was 0.21 and the relationship between them was weak.

Table 1. Demographic properties of employees in seafood processing facilities in İstanbul
Tablo 1. İstanbul ilindeki su ürünleri işleme tesislerindeki çalışanların demografik özellikleri

Social Structures of Employees	**Number**	**Percent (%)**
Gender Status		
Woman	84	48
Man	91	52
Age Groups		
18-29	57	32.56
30-40	60	34.29
41-60	53	30.29
60 ≥	5	2.86
Marital Status		
Widowed	2	1.15
Single	45	25.71
Married	128	73.14
Education Status		
Illiterate	14	8
Primary	43	24.57
Secondary	80	45.71
Associate Degree	13	7.43
License	20	11.43
Master	5	2.86
Newspaper Reading Frequency		
Every day	49	28
2-3 times a week	21	12
1 Time per Week	44	25.14
1 Times a month	61	34.86
The habit of reading books		
Never Reads	54	30.85
1 Time per Week	47	26.86
1 Time per Year	42	24
More Than 1 per Year	32	18.29
Social Media Account		
Yes	120	68.57
No	55	31.43

Table 1 (devamı). Demographic properties of employees in seafood processing facilities in İstanbul
Tablo 1 (continued). İstanbul ilindeki su ürünleri işleme tesislerindeki çalışanların demografik özellikleri

Number of Social Media Accounts		
1	48	27.43
2	46	26.29
3≥	26	14.85
Does not use	55	31.43
Internet Usage Frequency		
Günde 2-3 saat	96	54.86
2-3 hours per week	34	19.43
1 hour per month	8	4.57
Does not use	37	21.14
Reason for Using the Internet		
Reading News	9	10.84
Conducting Research	18	21.69
Communication with Friends	45	54.22
Listening to Music-Watching Videos	11	13.25
Not answer (Not included in the statistics)	(92)	(-)

As can be seen in Table 2, it was determined that while almost all of the employees (99.43%) had social security, only 0.57% (1 person) of all employees did not have social security. When the types of social security were examined, it was found that the vast majority of the employees were covered by SSK with 97.7%. In the research conducted in the aquaculture sector, it was observed that the social security status of the employees varied between 60% and 99% (Çeliker et al., 2006,2008; Daşdan et al., 2008; Doğan & Yıldız, 2008; Çağlak et al., 2012). With the amendments made in the social security legislation, the fact that social security institutions such as Bond, SSK and Pension Fund were gathered under a single roof ensured that the answer of the vast majority of all employees under the social security umbrella in our survey was SSK. When the positions and titles of the personnel in the workplace were examined, the rate of workers, which is an indicator of the aquaculture sector, was found to be 69.14% at the highest level. In the studies conducted by Duyar & Bayraklı (2005), Çapkın et al. (2008) and Çağlak et al. (2012), they similarly stated that the number of workers was high. While the answers of the employees who were very satisfied, satisfied and reasonably satisfied with their job were found as 13.14-45.14-30.86%, respectively, only 10.86% of them were dissatisfied. Anonymous (2021) job satisfaction data showed 6.7-7.3%, 73.7-70.9% and 9.9-11.9% of employees were very satisfied, satisfied and reasonably satisfied, respectively, in 2018 and 2019. When the research data were compared with the average in Turkey, the rate of satisfied employees was found to be low and the rate of reasonably satisfied employees was found to be high. In total, similar results with anonymous data were observed. In a study conducted in the hunting sector, they stated that the total rate of those who said good and medium to their satisfaction responses from the profession was 85.9% (Güngör et al., 2007). In the research conducted in Balıkesir, the total rate of those who said they were very satisfied and satisfied with their job was found to be 88% (Çağlak et al., 2012). The minimum wage amounts for 2018 and 2019 were determined as 2209 TL and 2558 TL. It is seen that 54.86% of the employees earns 2001 TL and above. The fact that there is 45.14% below the minimum wage also reveals that wages are made according to the work, experience and technical expertise in the aquaculture processing sector. When the results of the survey are examined, it is seen that the different industries and the aquaculture sector in our country are not different from other areas by reflecting the salaries of the employees exactly. With an amendment made in 1989, a new regulation was put forward in determining the minimum wage and the determination of the minimum wage differently for industry, agriculture and forestry cutting was ended, and the minimum wage to be applied in the whole country regardless of the region or sector difference was started to be determined by the central Minimum Wage Determination Commission (Eser

& Terzi, 2008). When the earnings satisfaction rates in the 2018 and 2019 surveys within the scope of anonymous (2021) data are examined, the total rate of those who are very satisfied and satisfied is between 41.9-43.4%, while the medium satisfaction is at the level of 21% and the total rate of those who are dissatisfied and not satisfied at all is between 34.4-33.6%. According to the average of Turkey, salary satisfaction was found to be low in this research and dissatisfaction rate was found to be high. This situation shows the improvement in salaries as stated above. In anonymous (2019) household consumption expenditure data, it is stated that the average monthly expenditure amount is over 4000 TL. In the research, the fact that the rate of those with an expenditure of 2001 TL and above is 48.57% reveals similar data with the average of Turkey. It was also observed that there was a relationship between the gain obtained and the amount of expenditure. When the monthly income and average monthly expenditure amount of employees were examined in the correlation analysis, it was recorded that they had a strong relationship with 0.8. When the correlation data between the title in the workplace and the satisfaction with the job were examined, the value r = -0.05 was found and it was determined that there was a negative weak relationship between them.

Table 2. Social security and economic structures of employees in seafood processing facilities in İstanbul
Tablo 2. İstanbul ilindeki su ürünleri işleme tesislerindeki çalışanların sosyal güvenlik ve ekonomik yapıları

Social Security and Economic Structures of Employees	**Number**	**Percent (%)**
Social Security Status		
Has social security	174	99.43
No social security	1	0.57
Social Security Institution		
SSK	170	97.70
Pension fund	1	0.58
Bond	3	1.72
Private insurance	-	-
Title		
Worker	121	69.14
Foreman	13	7.43
Technician	2	1.14
Engineer	15	8.58
Others (Driver, Accounting etc)	24	13.71
Job Satisfaction		
Very satisfied	23	13.14
Satisfied	79	45.14
Tolerable	54	30.86
Not Satisfied	19	10.86
Total Family Income (TL)		
950-1200	4	2.28
1201-1500	28	16
1501-2000	47	26.86
2001≥	96	54.86
Salary Satisfaction		
Yes	45	25.71
No	81	46.29
Tolerable	49	28
Average Monthly Spend (TL)		
0-500	1	0.57
501-949	-	-
950-1200	17	9.71

Table 2 (devamı)**.** Social security and economic structures of employees in seafood processing facilities in İstanbul
Tablo 2 (continued). İstanbul ilindeki su ürünleri işleme tesislerindeki çalışanların sosyal güvenlik ve ekonomik yapıları

1201-1500	19	10.86
1501-2000	53	30.29
2001 ≥	85	48.57

Housing situations and evaluations within the scope of social security and economic structures of the employees are presented in Table 3. It was determined that 52.91% of the home ownership rate, which is one of the important inputs of socio-economic data, was the host of the property. In different studies conducted on aquaculture sector employees, it was observed that the rate of home ownership varied between 51.6-76.67% (Çağlak et al., 2018; Sağlam & Karadal, 2016; Çağlak et al., 2012; Dogan, 2010; Celiker et al., 2006, 2008; Doğan & Yıldız, 2008). While our research findings remain within the determined values, the fact that the home ownership rate is over 50% in all studies reveals the importance of homeownership. In anonymous (2021) data, it is stated that the hosting rate in Turkey is 57.8%. When the housing type structures of the employees are examined, it is seen that 54.86% of them have apartment structures. In the study conducted by Çağlak et al. (2012) for the employees of aquaculture processing facilities in Balıkesir, it was stated that the apartment rates were over 50%. While the results we obtained are in line with other research data, they also clearly reveal the urban construction situation of Istanbul. When the housing sizes in Turkey are examined, it is stated that the average standard housing size is 100 m^2 at a rate of 80% (Anonymous, 2016). In the study conducted by Çağlak et al. (2018) on retail aquaculture sellers in Rize province, they declared that those residing in 0-90 m^2 houses had a share of 16.67% and those living in houses of 91-130 m^2 had a share of 55%. In Çağlak et al. (2012), socioeconomic analysis of employees working in aquaculture processing plants in the case of Balıkesir province, the rate of those living in houses between 50-100 m^2 was stated as 79.2%. In the answers given by the employees who participated in the survey, the rate of those living in houses between 90 and 130 m^2 was found to be 44.57%. The proportion of those living in ninety square meters and below was found to be the highest rate as 44%. The data obtained are consistent with other study findings, and some studies reveal differences. It is foreseen that this difference is more evident in the province of Istanbul depending on the size of the apartment in housing rents. When the heating method of the houses was examined, the heating rate with natural gas was found to be the highest (56.57%). In two different studies conducted by Çağlak et al. (2012, 2018), the rate of houses heated by natural gas was stated as 10% and 27%, respectively, according to the years. In Turkey's 2018 data, the average heating with natural gas was at the level of 70% (Anonymous, 2022). In the research data, the use of natural gas was found to be lower than the data of Turkey and higher than the results of other researches. The average household size of Turkey is 3.3 (Anonymous, 2021). In the socio-economic study of Sağlam & Karadal (2016), it is stated that 54% fishermen have 0-3 children, and it is estimated that there is a family structure of 3-5 people at the same rate. In our research, the maximum number of households of 4 people (44%) was found, and it was seen that these results were in line with the data of Turkey and other studies. The employment rate of a single person in the number of employees living in the same residence was determined as 46.86%. Çağlak et al. (2018), reported that the single person working rate in the family was 66.67% in their study. The study reveals that this difference is due to the economic structure of Istanbul and the living conditions by taking into account the ratio of two people (39.43%) in the survey results. When the results of the survey were evaluated, it was seen that 44% of the employees lived in a residence of 90 m^2 and below, and 44% of them lived as 4 people in the same residence. When the correlation analysis was performed, it was determined that the result was 0.07 and there was a very weak relationship between them.

Table 3. Housing and household structures of employees in seafood processing facility in İstanbul
Tablo 3. İstanbul ilindeki su ürünleri işleme tesislerindeki çalışanların konut ve hane halkı yapıları

Social Security and Economic Structures of Employees	Number	Percent (%)
Residential Property		
Owns a house	95	54.29
Tenant	59	33.71
living with family	21	12
Housing Type		
Detached house	35	20
Apartment	96	54.86
Slum	44	25.14
Housing Size (m^2)		
90 ≤	77	44
91-120	62	35.43
121-130	16	9.14
130-150	2	1.14
151 ≥	18	10.29
How the Housing Heats Up		
Stove	64	36.57
Heating system	8	4.57
Natural gas	99	56,57
Electricity	4	2,29
Number of Persons Living in Housing		
2	22	12.57
3	47	26.86
4	77	44.00
5	17	9.71
6 ≥	12	6.86
Number of Employees from the Same Housing Residents		
1	82	46.86
2	69	39.43
3	22	12.57
4	1	0.57
5 ≥	1	0.57

Multiple compliance analysis is a multivariate statistical technique of descriptive type used in cases where the relationships between variables are examined with two- or multidimensional crosstabs. As a result of this analysis, the relationships between the categories of each variable are examined and interpreted graphically. In other words, compliance analysis examines the compatibility of data in two or more categories (Kılıç, 2016). Training-Book Reading Frequency-Newspaper Reading Frequency Multiple Compliance Analysis values are shown in Figure 1. While the reading rates of primary school graduate personnel varied between 1 week and 1 per year, their newspaper reading rate was distributed between 1 and 2-3 per week. The distribution of book readings of people with secondary education 1 time per year and newspaper readings 1 time per month was found to be similar. The rates of reading 1 book per week and reading newspapers every day of the personnel who had an associate degree and those who had an undergraduate degree showed a distribution. According to the results of the Training-Internet Usage Frequency-Number of Social Media Accounts Multiple Compliance Analysis, the results of illiterate personnel were naturally determined as not using the internet and the number of social media was determined as zero. While it was observed that the staff with primary education used the internet for 2-3 hours per week, a consistent distribution was not observed in the number of social media. It is observed in Figure 2 that the number of social media accounts increases with the increase in educational level. Title-Monthly Income-Monthly

Expenditure Multiple Compliance Analysis Results are as seen in Figure 3. It iwas observed that monthly income amounts and monthly expenditure amounts were largely parallel to each other. In terms of title, monthly income and monthly expenditure distributions increased in income due to the increase in title and accordingly the amount of expenditure also increased. It was seen that the results of multiple harmony analysis between the number of people living in the house and the size of the house were in parallel with each other. It was observed that the housing sizes of the personnel with the title of Foreman, Engineer and Other were 90-120 m^2, and the number of people living in the residence was 3 people. It was determined that the number of people residing in the residence of the personnel with the title of employee was limited to 2 (Figure 4). When the results of the Multiple Compliance Analysis were examined, it was observed that the monthly income of the personnel with the title of employee was distributed between 1201 and 2000 TL and that the job satisfaction was negative. While the monthly incomes of foreman, engineer and other titled personnel were distributed as 1501 TL and above, job satisfaction was distributed among very satisfied and reasonably satisfied (Figure 5).

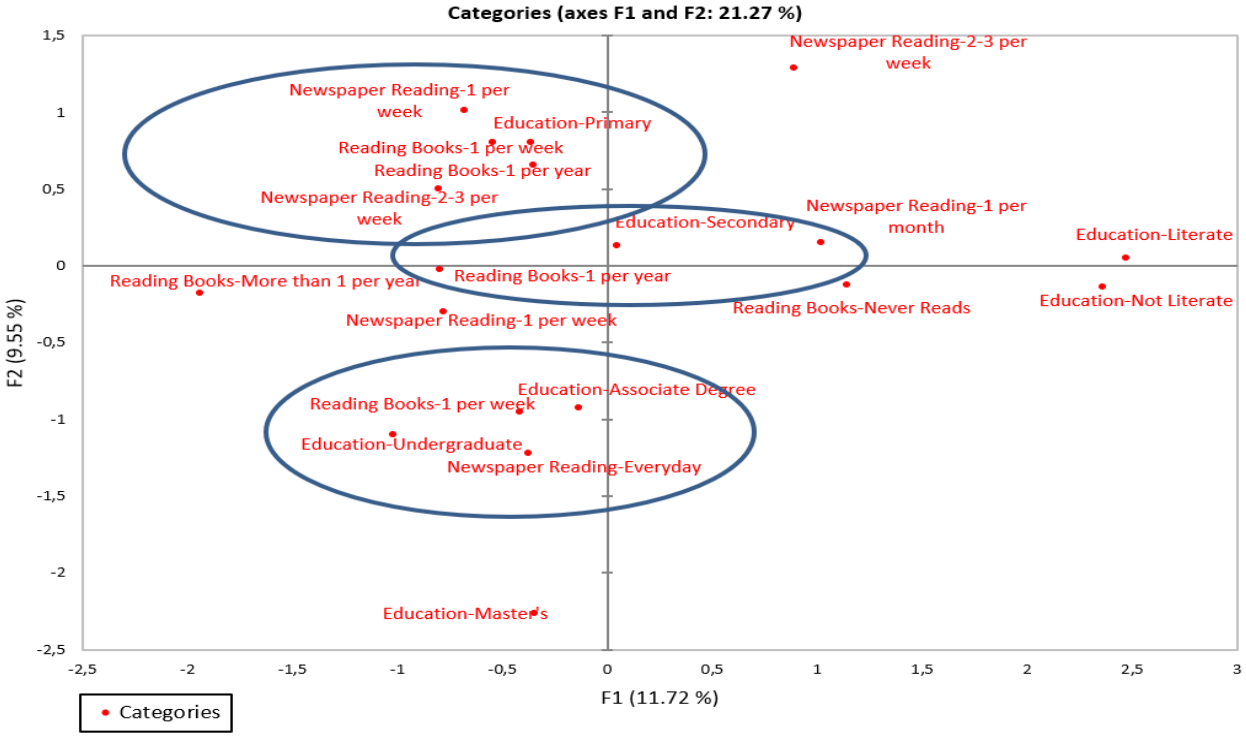

Figure 1**.** Education-book reading frequency-newspaper reading frequency multiple cohesion analysis

Şekil 1. Eğitim-kitap okuma sıklığı-gazete okuma sıklığı çoklu uyum analizi

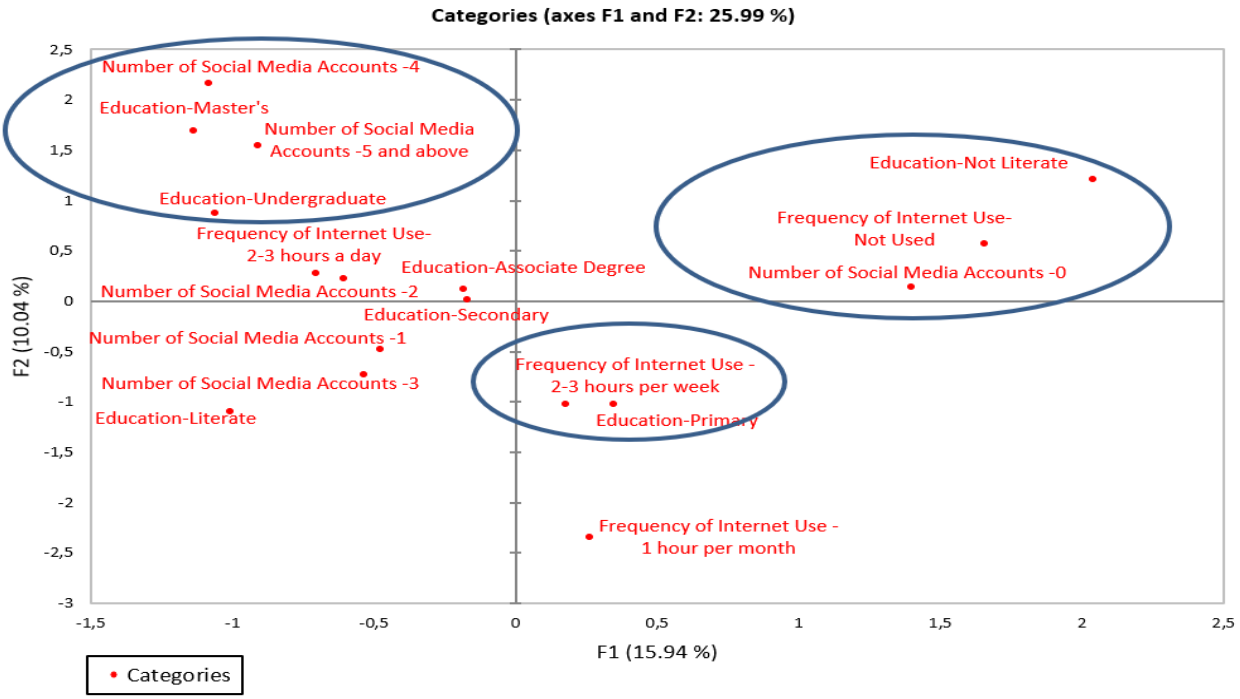

Figure 2. Education-frequency of internet use-number of social media accounts multiple cohesion analysis

Şekil 2. Eğitim-internet kullanma sıklığı-sosyal medya sayısı çoklu uyum analizi

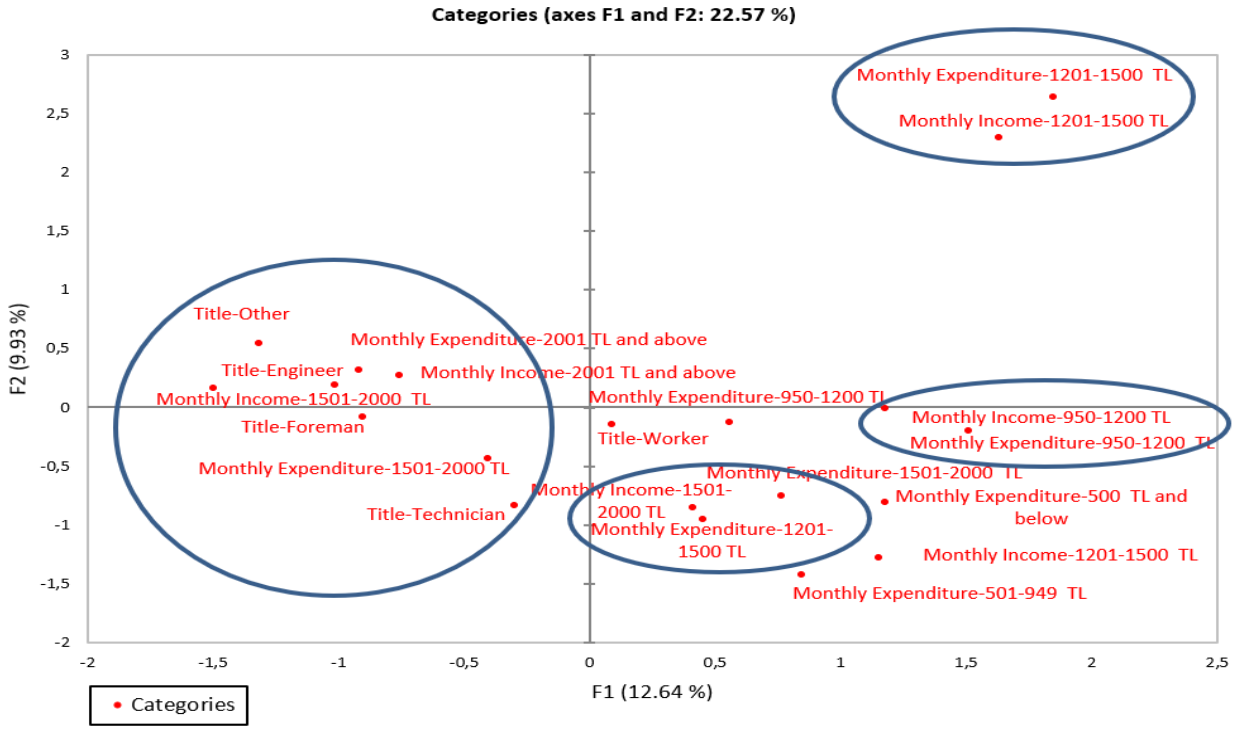

Figure 3. Title-monthly income-monthly expenditure multiple cohesion analysis

Şekil 3. Ünvan-aylık gelir-aylık harcama çoklu uyum analizi

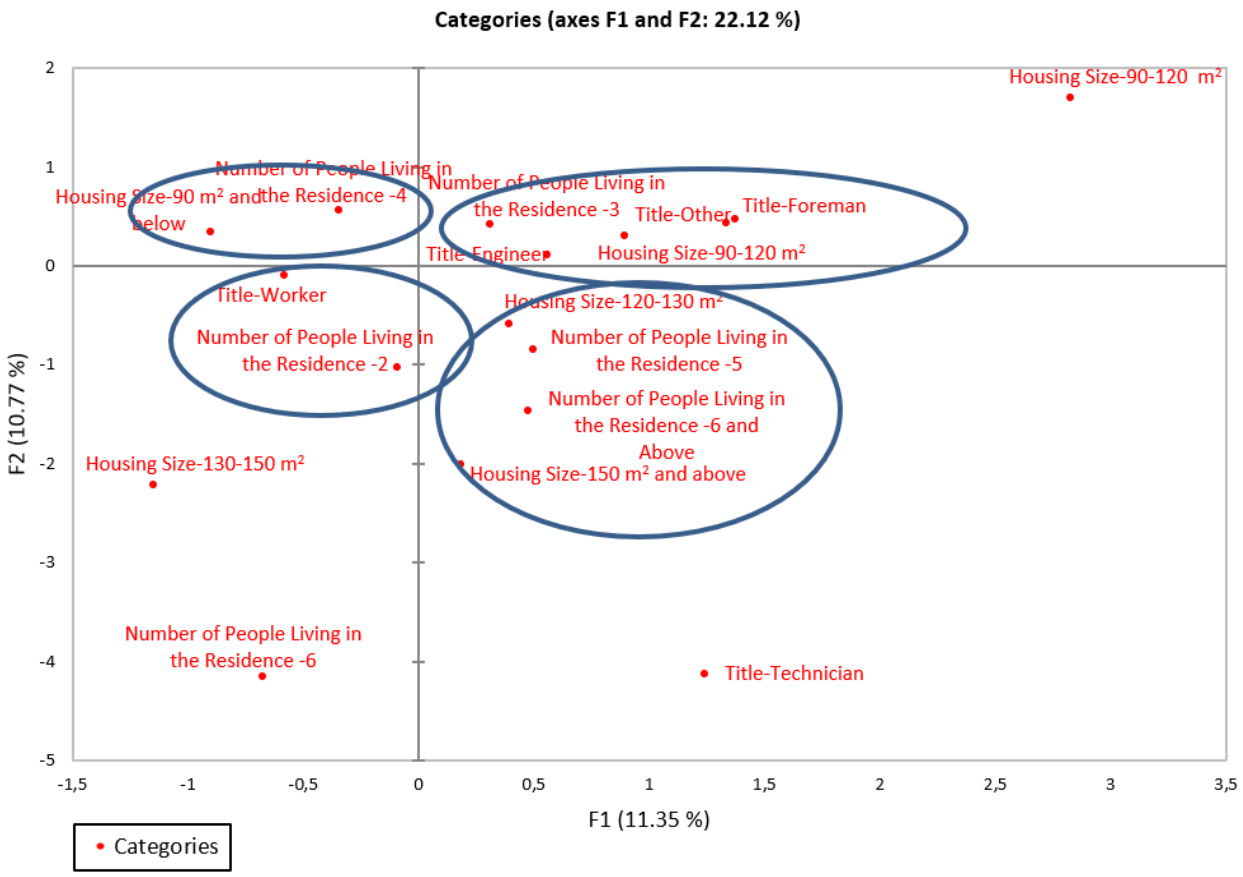

Figure 4. Housing size-number of residents-title multiple cohesion analysis

Şekil 4. Konut büyüklüğü-hane halkı sayısı- ünvan çoklu uyum analizi

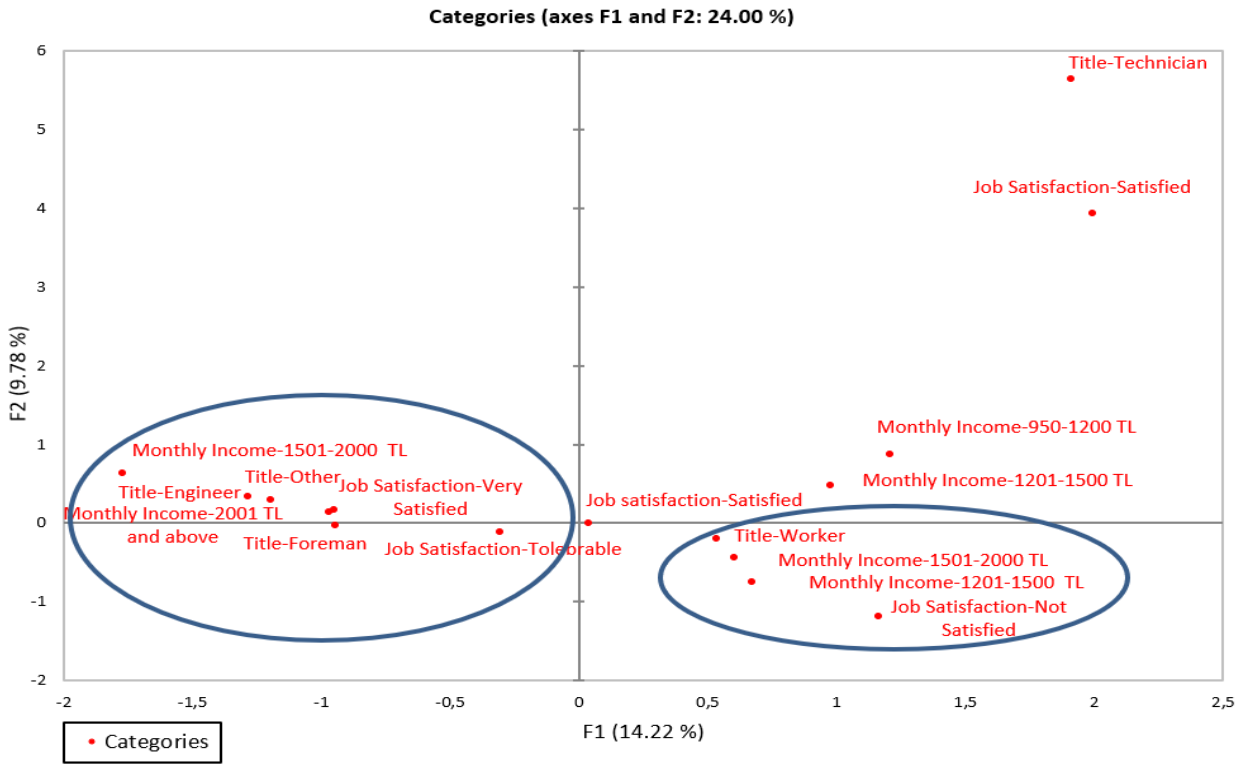

Figure 5. Monthly income-title-job satisfaction multiple cohesion analysis

Şekil 5. Aylık gelir-unvan-iş memnuniyeti çoklu uyum analizi

In the survey data and evaluation of the structure of the Processing Facilities, information including the addresses of the enterprises in Istanbul, establishment years, annual capacities, quality security systems, working days and hours are shown in Table 4.

Table 4. Processing facilities, year of establishment, address, operating capacities and quality assurance systems
Tablo 4. İşleme tesisleri, kuruluş yılı, adresi, işleme kapasiteleri ve kalite sistemleri

Facilities and Year of Establishment*	Address and Contact	Operating Capacity tons/year, Days and Hours d/h Worked	Quality Security Systems
A-2010	Sancaktepe/ İSTANBUL	1000 t/y, 6 d/10 h	HACCP, BRC, IFS, ASC, İSO 9001, İSO 22000
B-1989	Şile/İSTANBUL	600 t/y, 6 d/10 h	HACCP
C-2013	Esenyurt/İSTANBUL	180.000 t/y, 6 d/10 h	HACCP, İSO 22000, İSO 9001
D-2016	Çekmeköy/İSTANBUL	480 t/y, 6 d/9 h	İSO 9001-14001-22000,OHSAS 18001,HACCP
E-1971	Beşiktaş/İSTANBUL	10 t/y, 6 d/8 h	HACCP, İSO 22000, İSO 9001
F-2008	Sarıyer/İSTANBUL	12 t/y, 6 d/ 7 h	HACCP, İSO 22000, İSO 9001
G-2009	Bayrampaşa/İSTANBUL	100 t/y, 6 d/12 h	HACCP, İSO 22000, İSO 9001
H-2013	Bayrampaşa/İSTANBUL	624 t/y, 6 d/10 h	HACCP, İSO 22000, İSO 9001
I-2013	Eyüp/İSTANBUL	400 t/y, 6 d/10 h	HACCP, İSO 22000, İSO 9001
J-2008	Bayrampaşa/İSTAMBUL	72 t/y, 6 d/10 h	HACCP, İSO 22000, İSO 9001,İSO 18000
K-1990	Sarıyer/İSTANBUL	10 t/y, 6 d/10 h	HACCP, İSO 22000, İSO 9001
L-2007	Beykoz/İSTANBUL	100 t/y, 6 d/9 h	HACCP
M-2015	Beykoz/İSTANBUL	250 t/y, 6 d/10 h	HACCP

*For ethical reasons, company names are given as letters.

Aquaculture enterprises must obtain permission / approval from the Ministry of Food, Agriculture and Livestock in order to export to the member countries of the European Union and to non-member countries. As a result of the survey data, it was determined that the number of enterprises with export permission was 4 and the number of enterprises without export permission was nine. The places where the permitted enterprises export are determined as EU countries, Russia, USA, Japan, Italy, Bulgaria, Latvia, Sweden and Far East Countries. It should not be ignored that enterprises without export permits may be found in various permit applications according to the requests received over the years. In a previous study conducted in Istanbul, it is stated that there are 2 enterprises with EU approval number (Sağlam, 2017). Considering the proportion of enterprises with export permits, it is seen that exports in Istanbul are not at an advanced level, although it has increased according to the previous research. Considering the location, importance and potential of Istanbul, it is seen that it may have more export permits and rates. When the rate of state support in the enterprises participating in the survey was examined, it was determined that 5 enterprises received various supports from the state, two enterprises received electricity support, and four enterprises received SSK premium support. Eight businesses declared that they had not received any support. Government support is extremely important for businesses. In the study titled Current Status, Problems and Solution Proposals of Aquaculture Processing Plants in the Aegean region, it was seen that 36% of the processing facilities received state support and 64% did not receive incentives from the state (Avşan, 2014). In our study, while the rate of those who received incentives was 38.46%, the rate of those who did not receive incentives was determined as 61.54%. This situation reveals that businesses are not fully aware of state supports and two important situations such as avoiding bureaucratic procedures for state support. Safe food supply is extremely important not only to protect the health of the consumer mass through biological, chemical and other means of transmission, but also for healthy nutrition and healthy living. Consumer protection and prevention of diseases that

can be transmitted to the consumer with food are the most important basic elements of the food safety program. Food safety systems can be summarized as Total Quality Management (TQM), ISO 9000 (Quality Management System Standard), ISO 22000, GMP (Good Manufacturing Practices), Good Hygiene Practices (GHP), IFS, BRC and HACCP. In a study conducted in Istanbul (Sağlam, 2017), it was stated that 12 enterprises applied HACCP, 5 enterprises applied ISO and 2 enterprises applied good manufacturing practices from total quality management practices. In this study, it was similarly determined that all enterprises implemented the HACCP program, as well as 10 enterprises having ISO and 1 enterprise having BRC-IFS programs. When the analyses made in the enterprises were examined, it was stated that the water analysis was carried out quarterly in coordination with the Ministry of Agriculture, Food and Livestock. In addition to the Ministry of Agriculture, Food and Livestock Laboratories in the purchase and sale of products, it was also found that analyses were made in Private Laboratories. It was determined that microbiological, sensory (organoleptic) and some chemical (TVBN, Heavy Metal) analyses were carried out in the infrastructures of the enterprises. When the products processed in the enterprises and their regions of origin are examined, it is observed that marine and freshwater fish, mollusks, crustaceans and cephalopods are processed products. Products are imported from countries such as Norway, Spain, India, Indonesia, Iceland, Canada, Senegal, Vietnam, Egypt, Mauritania, Thailand, Morocco, Guinea and China. It is seen that enterprises have quality safety systems accepted in the world in healthy and reliable food production. In this context, it was determined that all enterprises used HACCP systems and that BRC, IFS, ASC, ISO 9001, ISO 22000, ISO 14001, and OHSAS 18001 systems were available in some enterprises. When the trainings given to the personnel within the scope of the quality safety system and company policy in the enterprises were evaluated in the survey results, it was determined that they were collected under the headings of Hygiene training, tool-equipment use, HACCP training, First Aid training, Occupational health / safety training, Chemical / Disinfectant use training, Job descriptions and Ethics trainings. The fact that businesses attach importance to the quality security system affects consumer preferences positively (Keleş et al., 2021; Keskin et al., 2021). When the problems encountered in the sector, the expected supports and requests are examined, the determined items are grouped as in Table 5. When the problems experienced in the sector are examined, almost all businesses have been found to have raised similar problems. Raw material supply, inspection, taxes, state support, a chamber of aquaculture engineers, domestic production, infrastructure regulation and sector transparency are the problems faced by enterprises in the sector. In the face of these problems, the solution proposals requested by the enterprises can be collected under six (6) headings.

-Bringing domestic products to the sector and giving incentives
-Lowering taxes
-Increasing support with information
-Prevention of overfishing, protection of stocks
-Reducing prices in analyses and strengthening the infrastructure of enterprises
-Establishment of a chamber of fisheries engineers and increasing the employment of aquaculture engineers

Table 5. Problems, supports and requests encountered in the sector
Tablo 5. Sorunlar, destekler ve sektörün istekleri

Problems Encountered	**Supports and Requests**
Supply of raw materials from abroad, rising exchange rate.	Bringing domestic products to the sector instead of supplying raw materials from outside
Inspectors are veterinarians	Aquaculture engineers have a say in exports and supervision

Table 5 (devamı). Problems, supports and requests encountered in the sector

Tablo 5 (continued). Sorunlar, destekler ve sektörün istekleri

High taxes on the products purchased	Reducing taxes to reasonable levels agreed by all parties
Low support and lack of information	Incentives and supports should be increased and businesses should be constantly informed about the practices to be carried out.
High fees in the analyzes performed	Increasing the efficiency of state laboratories in routine and non-routine analyzes and being economical
Chamber of Agricultural Engineers fails to adequately protect the rights of aquaculture engineers	Separate establishment of the aquaculture engineering chamber
Insufficient incentives for the processing of domestic products	Due to the fact that products imported from abroad create economic difficulties, there are state supports in the processing of domestic products.
Irregularity of Operation and Infrastructure	Regulation of laws, regulations and circulars, conducting inspections before the fish go ashore and increasing the measures at each step
Lack of transparency in the sector	Transparency of all stakeholders of the aquaculture sector, protecting each other and taking the necessary measures (example of the engineer killed)
Inadequate aquaculture promotion	Promoting aquaculture correctly, introducing healthy nutrition into the education curriculum
Monopolization in the sector	Legal arrangements that can be made to use the sector effectively and efficiently for all stakeholders, large and small.
Lack of adequate supervision in the prohibition of overfishing and hunting	It is a fact that stocks in our seas are decreasing, in this regard, increasing overfishing and hunting ban inspections (law enforcement effectiveness)
Insufficient protection of new stocks commissioned in our country	Protection of stocks of products found in the foreign market legal practices for many years on the processing of these products (the example of sea eggplant)

In the examination, it was determined that the enterprises had more than one product processing technology. In addition, according to the results of the survey, it is estimated that the enterprises operating in the region prefer simple methods that extend the shelf life instead of looking for new tastes in the products they have processed due to commercial reasons and consumers accustomed to traditional tastes. In the light of all studies, it is estimated that the enterprises with less than 20 personnel in Turkey are between 55-60%. When the number of personnel per facility is examined, the fact that the majority of enterprises employing 1-16 personnel do not carry out very detailed processing activities in the facilities is thought to be because of the use of personnel for general services such as sizing and casing and logistical activities. As the number of personnel increased, it was observed that the capacity and product variety of the facilities increased. As in other sectors of aquaculture, it is seen that employers give priority to the employment of young personnel by prioritizing work/manpower in the processing sector. The fact that the literacy rate is quite low in the results of the survey shows the development of Turkey in the field of education. While the fact that the rates of those who have an associate or bachelor degreeare at a certain level reveals the importance given to the work of the employees of the sector, the proportional surplus of primary and secondary school graduates is due to the excess of the working personnel in the status of workers. It is estimated that the rates of buying and reading newspapers tend to decrease due to the follow-up of news sites on social media. This situation is also in parallel with the increasing use of the Internet. The rate of people who do not have a social media account corresponds to approximately 1 in 3 of the personnel participating in the study with 31.43%.

When the social security situations that provide economic and social security were investigated, it was seen that almost all of them (174 people) were under the social security umbrella. It was determined that the employees of the aquaculture processing facilities in Istanbul were evaluated by the employers at the point of work/labor provision and the research findings were in parallel with other studies. According to anonymous (2021) data, when the poverty lines (6745-7532 TL) of 2018 and 2019 are examined, it is thought that employers should improve the wages they receive in a large part of the employees. However, the hunger limits for the same years were stated as 1919-2178 TL, and it was determined that a large part of the remuneration in this respect was at the hunger limits. The fact that Istanbul is an industrial city causes the construction to be concentrated in the form of apartment buildings depending on the population density. However, the fact that the night stay rate is higher than the detached house rate is an important indicator that the studies carried out in urban transformation for Istanbul have become a priority. It is thought that the high use of natural gas in Istanbul is higher than other provinces because the natural gas infrastructures in these provinces have not been fully and adequately put into operation. As the size of the house increased, the increase in the number of people living in the dwelling was especially evident in apartments over 120 m^2. The countries which the facilities export to may vary annually according to demand and supply. The fact that certain enterprises benefit from state support shows that they follow the legal legislation. Within the scope of the legislation of the Ministry of Agriculture and Forestry, the implementation of HACCP in all aquaculture processing facilities is a legal obligation. In this respect, it has been observed that enterprises support the necessary sensitivities about food safety with other quality control systems except for legal obligations. Since increasing the financial opportunities of the personnel is related to the economic situation of the enterprises, increasing the incentives and supports given to the enterprises will directly affect the financial situation of the personnel. The raw material needs of aquaculture processing plants are directly related to the aquaculture and hunting sector. While some enterprises in Istanbul use the raw materials they produce in their own cultivation facilities, enterprises that do not have an alternative have difficulty in supplying raw materials and are more affected by economic crises because they provide their raw materials from outside. At this point, it is thought that providing alternative and continuous products to the enterprises in Istanbul is extremely important for the future and continuity of the sector. As in all sectors, there is a shortage of workers, technicians and intermediate staff in the aquaculture processing sector. The excess of staff circulation is proof of this. Improving the conditions of the employees, increasing their salaries and thus eliminating the problems of the business owners will increase employment, ensure personnel continuity and relieve the sector. Aquaculture is a healthy food with no alternative. It is thought that if it is financially supported, its conditions are improved and the sector is given the value it deserves, the existing problems will disappear. When the development of the aquaculture sector is examined, it will be seen how important it is for Turkey and the world.

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CONFLICT OF INTEREST

The authors declare no conflict of interest for this study.

AUTHOR'S CONTRIBUTIONS

The contribution of the authors is equal.

STATEMENT OF ETHICS CONSENT

Ethical approval is not applicable, because this article does not contain any studies with human or animal subjects.

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