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Socio-Economic Characteristics of Producers and Economic Size Classes of Enterprises According to Typologies and Risk Attitudes in TR21 Region

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ABSTRACT

The aim of this study was to determine the typologies of agricultural enterprises operating in the TR21 Region according to the Farm Accounting Data Network methodology and the risk attitudes of the producers. According to the typologies and risk attitudes of the enterprises, the socio-economic characteristics of the producers and the economic size classes of the enterprises were determined. As a result of sampling based on a 95% confidence interval and a 10% margin of error, the number of enterprises surveyed was determined as 334. While 63.77% of the enterprises were specialized in field crops, 25.45% engaged in mixed livestock and plant production. Additionally, 7.49% were specialized in pasture livestock and 3.29% were in the perennial plant farming group. In the enterprises examined, 55.09% of the producers were classified as risk-averse and 44.91% as risk-lover. Of the average land holdings, 71.25% was property and 28.75% was rented land. It was noteworthy that the land rental rate in risk-lover enterprises was higher than in risk-averse enterprises. It was concluded that risk-lover enterprises had higher production value in both plant production and animal production, and risk-averse enterprises were engaged with product and animal diversity as they avoided taking risks. On average, in risk-lover enterprises, 53.64% of the operating expenses were vegetative special expenses and 46.36% were animal special expenses. In risk-averse enterprises, the share of vegetative special expenses in total expenses was 47.15%, and the share of animal special expenses was 52.85%. Compared to the average of enterprises and all enterprise typologies, standard gross profit was found to be higher in risk-lover enterprises. In enterprise typology groups, the average ESU values of the enterprises varied between 10.88 and 33.80 ESU. According to enterprise typologies, risk-averse agricultural enterprises in specialized field crop farming and perennial plant farming were in the below-medium enterprise class, while other enterprise groups were in the above-medium enterprise class.

Key words: Farm accounting data network, risk, enterprise typology

TR21 Bölgesinde İşletme Tipolojilerine ve Risk Tutumlarına Göre Üreticilerin Sosyo Ekonomik Özellikleri ve İşletmelerin Ekonomik Büyüklük Sınıfları

ÖZ

Bu çalışmanın amacı TR21 Bölgesinde faaliyet gösteren tarım işletmelerinin Çiftlik Muhasebe Veri Ağı metodolojisine göre işletme tipolojilerinin ve üreticilerin risk tutumlarının belirlenmesidir. İşletmelerin tipolojilerine ve risk tutumlarına göre üreticilerin sosyo ekonomik özellikleri ve işletmelerin ekonomik büyüklük sınıfları tespit edilmiştir. %95 güven aralığı ve %10 hata payına göre yapılan örnekleme sonucunda, anket yapılan işletme sayısı 334 olarak belirlenmiştir. İşletmelerin %63.77'si tarla bitkileri üzerine ihtisaslaşmışken, %25.45'i karma hayvancılık ve bitkisel üretim yapmaktadır. Ayrıca, %7.49'u otlak hayvancılığı üzerine ihtisaslaşmış, %3.29'u ise daimî bitki yetiştiriciliği grubundadır. İncelenen işletmelerde yöneticilerin %55.09'u

riskten kaçınan, %44.91'i ise risk almaya eğilimli olarak sınıflandırılmıştır. Ortalama arazi varlığının %71.25'i mülk ve %28.75'i kira ile işlenen arazilerdir. Risk seven işletmelerde arazi kiralama oranının da risk sevmeyen işletmelere göre daha yüksek olduğu göze çarpmaktadır. Gerek bitkisel üretimde gerekse hayvansal üretimde risk seven işletmelerin üretim değeri daha fazla olup, risk sevmeyen işletmelerin risk almaktan kaçındıkları için ürün ve hayvan çeşitliliğine daha fazla yer verdikleri sonucuna ulaşılmıştır. İşletmeler ortalaması olarak risk seven işletmelerde işletme masraflarının %53.64'ünü bitkisel özel masraflar, %46.36'sını ise hayvansal özel masraflar oluşturmaktadır. Risk sevmeyen işletmelerde toplam masraflar içinde bitkisel özel masrafların payı %47.15, hayvansal özel masrafların payı %52.85'tir. İşletmeler ortalamasına göre ve tüm işletme tipolojilerine göre standart brüt kar risk seven işletmelerde daha yüksek olarak bulunmuştur. İşletme tipoloji gruplarında, işletmelerin ortalama ESU değerleri 10.88 ile 33.80 ESU arasında değişmektedir. İşletme tipolojilerine göre ihtisaslaşmış tarla bitkileri yetiştiriciliği ve daimî bitki yetiştiriciliği risk sevmeyen tarım işletmeleri ortanın altı, diğer işletme grupları ortanın üstü işletme sınıfında yer almıştır.

Anahtar kelimeler: Çiftlik muhasebe veri ağı, risk, işletme tipolojisi

INTRODUCTION

Since their establishment, European Union (EU) countries have been carrying out various integration and investment studies in order to reduce structural differences between countries and develop economic sectors. In this context, the Common Agricultural Policy (CAP) is of great importance in activities aimed at the agricultural sector. In order to ensure that the decisions to be taken in the sectorial development and integration processes are correct and effective, the EU Commission needs data and information that constantly monitor the current situation of the sector, the economic and structural performances of the enterprises and their development trends. Farm Accounting Data Network (FADN), one of the important tools used in shaping the Common Agricultural Policy, has been mandatorily implemented in EU member states since 1965. By means of FADN, the financial performance and annual income of the enterprises are determined with the data collected from agricultural enterprises and their impact on the agricultural sector is monitored (Yıldırım Korkmaz, 2014).

It is very important to predict future changes in sectors and make decisions based on these predictions. In order to create policies to develop the agricultural sector, it is necessary to collect reliable, up-to-date and detailed data about the sector. With the information obtained and analyzed by the Farm Accounting Data Network system, agricultural enterprises are managed more effectively and it is possible to make the right decisions for the future.

There are various factors that affect the process of dissemination and adoption of innovations in agriculture. Among these factors, the risk-taking behavior of producers also has an important place. The acceptance of any technological innovation by producers in a region requires an effective extension effort as well as understanding of producers' attitudes towards risks.

While examining decision-making processes under risk and uncertainty in agriculture, determining farmers' risk perceptions and attitudes will increase the reliability of the findings. Farmers may react differently to risk depending on their objectives and the resources they have. These differences affect their productivity and efficiency in agricultural production and enterprise activities in various ways (Gündüz et al., 2017).

There are researches on the Farm Accounting Data Network in the literature. Boers et al. (1994), in their research on FADN, found that 66.88% of the enterprises engaged in dry agriculture, livestock, vegetable growing and floriculture in the Netherlands were dry agriculture and livestock enterprises, 19.87% were horticulture enterprises and 13.25% were mushroom enterprises. Gündoğmuş (2000) classified the specialized grain enterprises in Konya province according to FADN and found that 42.99% of the enterprises were very small, 34.58% were small, 15.89% were medium small and 6.54% were in the medium-large enterprise group. In his study, Külekçi (2006) determined the economic sizes and enterprise typologies of livestock farming enterprises in Erzurum province according to the FADN system, and found the specialized dairy cattle type to be the highest with a rate of 56.20%. Çelik and Direk (2008) determined in their study that agricultural enterprises producing carrots in Konya Province were in 6 different economic size groups. Erol (2008) determined that enterprises producing maize in Çumra District of Konya Province were in 4 different economic size groups according to FADN. Emre (2010) found that the economic size of enterprises producing apple in Eğirdir district of Isparta province varied between 2.39 ESU and 53.39 ESU, and the average of enterprises was 19.40 ESU. Yıldırım Korkmaz (2014) determined that the enterprises producing fruit in the Kazova Region of Tokat province and Demirel (2019) determined that the enterprises producing wheat in the Kumkale Plain of Çanakkale Province were in 5 different economic size groups according to FADN. Svjetlana (2018) analysed the

FADN methodology and its applicability in Serbia. Coppola et al. (2020) analysed agricultural income using the FADN system in their study. Ivanovic et al. (2020) analysed the productivity of Serbian milk producers in the FADN sample. Kanat and Çelik (2023) determined the types, economic size classes and standard activity results of agricultural enterprises in the Central Anatolian Agricultural Basin according to the FADN system.

There are national and international studies on risk in agricultural production. Ceyhan et al. (1997) determined that 38% of the farmers in Terme district of Samsun province were risk-lover, 60% were risk-averse and 2% were risk neutral. Risk behaviors of dairy cattle farming enterprises in Merzifon district of Amasya province were determined by Hazneci (2009), and it was determined that 31% of the farmers liked the risk and 69% did not like the risk. Foudi and Erdlenbruch (2012) determined producers' attitudes towards risk and production decisions in France. De Mey et al. (2014) concluded that the risk behavior of the producers registered in the FADN system varied according to enterprise typologies and countries. Bayramoğlu et al. (2015) examined the risk perception according to enterprise typologies in Konya province, Van Asseldonk et al. (2016) comparatively examined the adaptation process of the producers to risk management strategies and their attitudes towards risk according to enterprise typologies in 7 countries that were members of the European Union. Özer and Tümer (2020) found that 30.7% of agricultural enterprises growing lemon in Mersin Province Erdemli District liked risk, 30% were unresponsive to risk and 39.3% did not like risk.

In this study, typologies of agricultural enterprises operating in the TR21 Region and risk attitudes of producers were determined according to the FADN methodology. The socio-economic characteristics of the producers and economic size classes were determined according to the typologies and risk attitudes of the enterprises. There is no study conducted according to the FADN methodology in the TR21 Region. Economic resource utilization contribution will be provided for the agricultural sector by determining profitable enterprise types and appropriate farming systems in the TR21 Region, which has the opportunity to grow many crops.

MATERIAL AND METHOD

Material

The data used in the study was collected through face-to-face surveys with agricultural enterprises operating in the TR21 Region. The survey forms prepared for the purpose of the research were filled in by the researchers through one-on-one interviews. The primary data that formed the basis of the analysis was obtained directly from the producers in the sample.

Method

Since it was not possible to interview all agricultural enterprises in the research region, it was planned to conduct a survey by determining a sample group that would represent the agricultural enterprises in the region. For this purpose, in determining the surveyed enterprises, firstly, information was collected from Edirne, Kırklareli and Tekirdağ Provincial Directorates of Agriculture and Forestry about the names of the districts and villages/neighborhoods and the number of the enterprises. There are 242 villages/neighborhoods in Kırklareli, 322 in Edirne and 330 in Tekirdağ.

After listing the number of enterprises in the villages of the districts, the coefficient of variation was calculated. The high coefficient of variation (82.25%) was due to the fact that the number of the enterprises in the villages was not homogeneous and therefore the stratified sampling method was applied in the sampling. A distribution graph was drawn and by taking into account the breaks in the graph, the research population was divided into three groups as villages with 1-25, 26-50 and more than 50 enterprises. There were 171 villages in the first group, 190 villages in the second group, and 533 villages in the third group. In the sampling conducted according to 90% confidence interval and 10% margin of error, the number of villages surveyed was determined as 54. In this context, a survey was conducted in 2 villages from the first group, 2 villages from the second group and 50 villages from the third group.

In the sampling study, the "EU Agricultural Enterprises Accounting Data Network" methodology was taken into account. The enterprises to be selected from the main population are determined based on three main criteria: region, economic size and enterprise typology. Additionally, when determining the sample size, enterprises smaller than 1 hectare are not included in the main population, but these small enterprises can be included in the main population if they offer a large portion to the market (Çelik, 2014). Since the typologies of the enterprises in Turkey have not been determined according to economic size and gross profit, these criteria have not been evaluated. Therefore, when determining the sample size, only the region and the criteria of enterprises with land higher than 1 hectare were taken into account.

In the determined villages, the land sizes of the producers were obtained and divided into three groups as those with 1-5 hectare of land (first group), those with 5.1-15 hectare of land (second group) and those with more than 15 hectare of land (third group). Proportional Stratified Sampling method was used to determine the number of agricultural enterprises surveyed.

$$n = \frac{\sum(Nh * Sh)^2}{N^2D^2 + \sum Nh * (Sh)^2} \qquad n_i = \frac{Nh}{\sum Nh} * n$$

There were 1789 enterprises in the first group, 2630 enterprises in the second group and 1481 enterprises in the third group. The standard deviation of the first group was calculated as 11.36, the second group as 27.96 and the third group as 247.82. As a result of sampling based on a 95% confidence interval and a 10% margin of error, the number of the enterprises surveyed was determined as 334. According to this distribution, 101 enterprises in the first group, 149 enterprises in the second group and 84 enterprises in the third group were surveyed.

Within the scope of the research, 125 surveys were conducted in 20 villages in Edirne province, 83 surveys in 14 villages in Kırklareli province and 126 surveys in 20 villages in Tekirdağ province. The surveyed enterprises were selected using the random numbers table. The survey studies were carried out between July 2021 and December 2021, and the data received within the scope of the project belonged to the production period of 2021.

Farm Accounting Data Network method was used to determine enterprise typologies. According to the FADN system, the typology of an agricultural enterprise is determined based on the total standard gross profit of the enterprise. Standard Gross Profit is calculated by subtracting the specific variable costs of the product from the standard gross production value of the agricultural activities carried out in the enterprise.

According to the FADN system, the typology of an enterprise is determined by the proportional contribution of different activities to the total standard gross profit. If the Standard Gross Profit (SPV) of an activity constitutes more than 2/3 of the total enterprise Standard Gross Profit, the enterprise is defined as specialized in that activity (for example, a specialized grain enterprise or a specialized livestock enterprise). If the Standard Gross Profit contributions of the activities in the enterprise are below 2/3, the enterprise is classified as a mixed plant or animal farm.

Another criterion used in determining the sample of agricultural enterprises in the FADN system is the economic size of agricultural enterprises. Standard Gross Profit is taken into account when determining the size of agricultural enterprises. To determine the economic size classes of the enterprises, standard gross profits calculated in the 2020-2021 production period data were converted to the European Currency Unit (ECU) by dividing by the Euro/TL rate of 10.50 TL. Afterwards, the economic size classes of the enterprises were determined by dividing the standard gross profits calculated in ECU by 1200 Euros, which was 1 economic size unit. Economic size is expressed as European Size Unit (ESU). In terms of economic size, enterprises are divided into ten different size classes and these classes are shown in Table 1.

Table 1. Economic size groups

Size Class	Size (ESU)	Size Groups
I	<2	Very small
II	≥2 and <4	
III	≥4 and <6	Small
IV	≥6 and <8	
V	≥8 and <12	Below Middle
VI	≥12 and <16	
VII	≥16 and <40	Above Middle
VIII	≥40 and <100	Big
IX	≥100 and <250	Very big
X	≥250	

In determining risk behaviors, "reference gamble" and "preference scales" in which the probabilities are on the vertical axis and the indifference point are on the horizontal axis were used. Risk behaviors of the producers were grouped as risk-lover, risk-averse and risk neutral. Enterprises were classified according to their typology and risk groups, and the risk attitudes of the enterprises in each typology were determined. Since risk neutrality is considered a special risk aversion (Holloway, 1979; Ceyhan et al., 1997), producers who were risk neutral were included in the risk averse group and analyzes were carried out accordingly.

Descriptive statistics and cross-tables were used in the analysis of the data obtained.

RESULTS AND DISCUSSION

The classification of enterprises in terms of typology and risk groups is given in Table 2. Cultivation of field crops, especially wheat and sunflower, is quite common in the TR21 Region. In addition, pasture livestock farming is among the livelihoods of enterprises operating in the TR21 Region.

While 63.77% of the enterprises specialized in field crops, 25.45% engaged in mixed livestock and plant production. Additionally, 7.49% were specialized in pasture livestock farming and 3.29% were in the perennial plant farming group. Kanat and Çelik (2023) determined that the enterprises examined were in 4 farms types. as specialist field crops, specialist grazing livestock, mixed crops-livestock, and specialist horticulture.

In the enterprises, 55.09% of the managers were classified as risk-averse and 44.91% as risk-lover. Ceyhan et al. (1997) revealed in their research that 38% of the enterprises were described as risk-averse, while 62% were described as risk-lover and neutral to risk. Akçaöz (2001 determined the rate of risk-lover enterprises as 40.20%, and the total rate of risk-averse and neutral enterprises as 59.80% in the Çukurova region. Akçaöz et al. (2006) determined that 39.9% of farmers were classified as risk-lover, while 60.1% were classified as risk-averse and risk-neutral. Bayramoğlu et al. (2015) stated in their study that 70.45% of the managers were considered risk-averse and 29.55% were considered risk-lover.

Table 2. Classification of enterprises in terms of typology and risk groups

Enterprise Groups	Typology Group	Risk Group	Number of Enterprises	%
Group 1 (1-5 ha)		Risk Lover	45	13.47
		Risk Averse	56	16.77
		Total	101	30.24
Group 2 (5.1-15 ha)		Risk Lover	65	19.46
		Risk Averse	84	25.15
		Total	149	44.61
Group 3 (15 ha+)		Risk Lover	40	11.98
		Risk Averse	44	13.17
		Total	84	25.15
Average of Enterprises	Specialized Field Crops	Risk Lover	102	30.54
		Risk Averse	111	33.23
		Total	213	63.77
	Mixed Livestock and Plant Production	Risk Lover	38	11.38
		Risk Averse	47	14.07
		Total	85	25.45
	Specialized Pasture Livestock	Risk Lover	5	1.50
		Risk Averse	20	5.99
		Total	25	7.49
	Specialized Perennial Plant (Fruit Growing)	Risk Lover	5	1.50
		Risk Averse	6	1.80
		Total	11	3.29
	Total	Risk Lover	150	44.91
		Risk Averse	184	55.09
	Total		334	100.00

The attitude ratios of the enterprises towards risk varied according to typologies (Table 3). The highest percentage of the producers who did not like risk (80%) were in the group of enterprises engaged in specialized pasture livestock farming. The rate of risk-averse producers was higher than the rate of risk-lover producers in enterprises that engaged in specialized field crops, specialized perennial plant farmin<g, and mixed livestock and plant production. Widespread grain farming and wheat-sunflower rotation practices in the region make ecological conditions unsuitable for product diversification. In addition, the lack of alternative income sources in the region causes producers to be more cautious against risk.

The highest percentage of risk-lover producers (47.89%) was found in specialized field crops enterprises. These enterprises focus on the production of field crops, and grain farming is generally considered a low-risk

activity in terms of risk factors (Hazneci, 2009). Producers engaged in specialized perennial plant farming, mixed livestock and plant production were the groups that stood out with their tendency to take high risks, after those who did not like risk. It was observed that in enterprises where livestock farming was the main source of income, the rate of risk-averse producers was high. In the study carried out by Bayramoğlu et al. (2015), it was determined that the highest risk-lover producers (41.67%) were in specialized garden products group.

Table 3. Classification of enterprises according to their typologies in terms of risk attitudes

Typology Group	Risk Group	Number of Enterprises	%
Specialized Field Crops	Risk Lover	102	47.89
	Risk Averse	111	52.11
	Total	213	100.00
Mixed Livestock and Plant Production	Risk Lover	38	44.71
	Risk Averse	47	55.29
	Total	85	100.00
Specialized Pasture Livestock	Risk Lover	5	20.00
	Risk Averse	20	80.00
	Total	25	100.00
Specialized Perennial Plant (Fruit Growing)	Risk Lover	5	45,45
	Risk Averse	6	54.55
	Total	11	100.00

The socio-demographic characteristics of the producers in terms of typologies are given in Table 4. The average age of producers in specialized field crop farming enterprises was 55.43 in risk-lover enterprises, while it was 58.37 in risk-averse enterprises. The average age of producers in enterprises engaged in mixed livestock and plant production was found as 54.37 in risk-lover enterprises and 56.60 in risk-averse enterprises. In the specialized pasture livestock enterprise typology, the average age of producers was found as 55 in risk-lover enterprises and 52.75 in risk-averse enterprises. In the specialized perennial plant farming enterprise group, the average age of producers was found as54.80 in risk-lover enterprises and 63.67 in risk-averse enterprises.

According to the enterprise average, the average age of the producers was determined as 55.13 in the risk-lover enterprise group and 57.48 in the risk-averse enterprise group, and it was determined that risk-lover producers were younger than non-risk-lover producers.

In the specialized field crop farming enterprise group, the average education period of the producers was found as 7.62 years in risk-lover enterprises and 7.16 years in risk-averse enterprises. The average education period of the producers in the mixed livestock and plant production risk-lover enterprise group was found as 7.18 years, and in risk-averse enterprises it was 6.36 years. In the pasture livestock farming group, the average education period of the producers was found as 8 years in risk-lover enterprises and 7.45 years in risk-averse enterprises. In the perennial plant farming group, the average education period of the producers was found as 8.20 years in risk-lover enterprises and 8 years in risk-averse enterprises. According to the average of the enterprises, the average education period of the producers in risk-lover enterprises was found as 7.54 years, and in risk-averse enterprises it was found as 7.02 years.

It was seen that in all enterprise types, the average education period of risk-lover producers was higher than risk-averse producers. The level of education has important effects on the success of agricultural production. The owner of the enterprise, who makes the production decision, is the manager and entrepreneur of the enterprise. The entrepreneur is defined as the person who brings the production factors together and takes responsibility for the possible risks that may be encountered during the production process. According to this definition, it is known that the producer is the decision maker and makes this decision under possible risks. Maximizing the profit of the producer will be possible by minimizing the risks. All of this will be possible if the producer has access to the correct information and makes the right decision. This situation is related to the education levels of the producers. Producers with higher education levels can access information and make more effective decisions under risk (Gündüz et al., 2017).

The average agricultural experience of the producers in the risk-lover enterprises group of specialized field crops farming was found as 34.36 years, and in risk-averse enterprises it was 35.20 years. The average agricultural experience of the producers in the mixed livestock and plant production risk-lover enterprise group

was found as 31.47 years, and in risk-averse enterprises it was 35.47 years. In the pasture livestock risk-lover enterprise group, the average duration of producers' involvement in agriculture was 36.40 years, while in the risk-averse enterprise group, this value was lower and was found as 32.05 years. The lowest duration of engagement in agricultural activities was in the perennial plant farming risk-lover enterprise group and was 30.60 years. In the risk-averse enterprise group, the average agricultural experience of the producers was found as 37.50 years. It was determined that, especially in enterprise groups where plant production rather than livestock farming was more intense, the age of the producers was younger and their agricultural experience was slightly less. According to the enterprise average, the average agricultural experience of the producers was determined as 33.57 in the risk-lover enterprise group and 35 in the risk-averse enterprise group.

In the specialized field crop farming enterprise typology, it was determined that the population amount was 2.82 people in the risk-lover enterprise group and 2.56 people in the risk-averse enterprise group, and the population amount was determined as 2.69 people as the average of the enterprises. In the mixed livestock and plant production enterprise typology, it was determined that the population amount was 3 people in the risk-lover enterprise group, 2.83 people in the risk-averse enterprise group, and 2.91 people as the average of the enterprises. In the pasture livestock enterprise typology, it was determined that the population amount was 3 people in the risk-lover enterprise group, 2.85 people in the risk-averse enterprise group, and the average of the enterprises was 2.88 people. In the perennial plant farming enterprise typology, the population amount was found as 2.80 people in the risk-lover enterprise group, 2.50 people in the risk-averse enterprise group, and the average of the enterprises was 2.63 people. The average population of the enterprises was 2.87 people in the risk-lover enterprise group, 2.66 people in the risk-averse enterprise group, and 2.76 people as the average of the enterprises.

The minimum population of the specialized perennial plant farming enterprise typology with 2.50 people was in the risk-averse enterprises group, and the highest population of the mixed livestock and plant production enterprise typology and pasture livestock enterprise typology with 3.00 people was in the risk-lover enterprises group. In addition, in all enterprise typology groups, the population of the risk lover enterprises was higher than that of risk-averse enterprises. Similar results were obtained in similar studies on this subject (Hazneci, 2009; Bayramoğlu et al., 2015), and the young population was higher, especially in risk-lover enterprises.

In all enterprise typologies, the rate of non-agricultural income in risk-lover enterprise groups was higher than in risk-averse enterprise groups. The fact that producers in the risk-lover group had a different source of income other than agriculture showed that these producers had higher socio-economic welfare and could take more risks.

Table 4. Socio-demographic characteristics of the producers

Typology Group	Risk Group	Average Age	Average Education Period	Average Agricultural Experience	Number of Family Members	Non-Farm Income (%)
Specialized Field Crops	RL	55.43	7.62	34.36	2.82	36.27
	RA	58.37	7.16	35.20	2.56	32.43
	Mean	56.96	7.38	34.80	2.69	34.27
Mixed Livestock and Plant Production	RL	54.37	7.18	31.47	3.00	42.11
	RA	56.60	6.36	35.47	2.83	38.30
	Mean	55.60	6.73	33.68	2.91	40.00
Specialized Pasture Livestock	RL	55.00	8.00	36.40	3.00	60.00
	RA	52.75	7.45	32.05	2.85	40.00
	Mean	53.20	7.56	32.92	2.88	44.00
Specialized Perennial Plant	RL	54.80	8.20	30.60	2.80	40.00
	RA	63.67	8.00	37.50	2.50	16.67
	Mean	59.64	8.09	34.36	2.63	27.27
Average of Enterprises	RL	55.13	7.54	33.57	2.87	38.67
	RA	57.48	7.02	35.00	2.66	34.24
	Mean	56.42	7.25	34.36	2.76	36.23

RL: Risk-lover, RA: Risk-averse

Land assets and savings status of the examined enterprises according to their enterprise types are given in Table 5. On average, the proportion of property land was high in risk-averse enterprises, while the rented land was high in risk-lover enterprises. The average land size of the enterprises was found as 15.44 hectares, and it was determined that 71.25% of the enterprise land was property land and 28.75% was rented land. It was determined that the amount of land per enterprise in the research region was above the Türkiye average (approximately 6 hectares).

Compared to the average of enterprises, it was determined that the rate of rented land was higher in enterprises engaged in specialized field crop farming and perennial plant farming. On the other hand, the rate of rented land in the other two types of enterprises where livestock farming was dominant was relatively lower. Producers, who were mainly engaged in plant production, also performed plant production through land rental in order to provide product diversity and thus increase their income. In addition, the increase in the profitability of paddy production, especially in years when product prices were high, encouraged the desire to grow paddy in large areas, and this resulted in an increase in rental activities and therefore an expansion of the enterprise size. It was possible to show that the rate of rented land was the lowest in the specialized pasture livestock farming group compared to other enterprise types as a reason for this situation.

Table 5. Land ownership status in the enterprises

Typology Group	Risk Group	Land Ownership					
		Property Land		Rented Land		Total	
		Ha	%	Ha	%	Ha	%
Specialized Field Crops	RL	11.84	72.70	4.45	27.30	16.28	100.00
	RA	10.62	68.23	4.95	31.77	15.57	100.00
	Mean	11.20	70.42	4.71	29.58	15.91	100.00
Mixed Livestock and Plant Production	RL	9.30	65.91	4.81	34.09	14.11	100.00
	RA	12.39	77.95	3.50	22.05	15.89	100.00
	Mean	11.01	72.92	4.09	27.08	15.10	100.00
Specialized Pasture Livestock	RL	10.90	62.64	6.50	37.36	17.40	100.00
	RA	11.22	80.40	2.74	19.60	13.96	100.00
	Mean	11.16	76.18	3.49	23.82	14.65	100.00
Specialized Perennial Plant	RL	7.10	47.65	7.80	52.35	14.90	100.00
	RA	6.35	85.04	1.12	14.96	7.47	100.00
	Mean	6.69	61.69	4.15	38.31	10.85	100.00
Average of Enterprises	RL	11.00	69.99	4.72	30.01	15.72	100.00
	RA	11.00	72.31	4.21	27.69	15.21	100.00
	Mean	11.00	71.25	4.44	28.75	15.44	100.00

RL: Risk-lover, RA: Risk-averse

The production value of an agricultural enterprise includes the total value of plant and animal products obtained as a result of one year's economic activities and the increase in value resulting from the production of these products. The total production value in the enterprises is given in Table 6. Compared to the average of enterprises, it was seen that the value of vegetative gross production was higher in risk-lover enterprises. In mixed livestock and plant production typologies, it was noticeable that the value of plant production was higher in risk-averse enterprises. In this enterprise typology, it was observed that risk-averse enterprises gave more space to product diversity.

According to the enterprise average, the share of animal production value in the total production value was found as 25.12% in risk-lover enterprises and 31.85% in risk-averse enterprises. It was concluded that risk-lover enterprises had higher production value in both plant production and animal production, and risk-averse enterprises were engaged with product and animal diversity as they avoided taking risks.

The total production value per enterprise varied between 176,717.80 - 494,018.61 TL according to enterprise types, and this value was found to be 310,394.87 TL as the average of all enterprises. According to enterprise typologies, the lowest production value was seen in specialized field crops enterprises, and the highest production value was seen in enterprises engaged in specialized pasture livestock farming. On average, the total production value per enterprise in risk-averse enterprises was 304,494.88 TL, while it was 317,632.21 TL in risk-lover enterprises. It is expected that the production value will be high in risk-lover enterprises

(Bayramoğlu et al., 2015). As an average of enterprises, the majority of the total production value consisted of plant production value (71.25%).

Table 6. Production values obtained in the enterprises

Typology Group	Risk Group	Plant Production Value		Animal Production Value		Total Production Value	
		TL	%	TL	%	TL	%
Specialized Field Crops	RL	243,871.68	95.22	12,245.69	4.78	256,117.37	100.00
	RA	224,334.48	89.69	25,782.12	10.31	250,116.60	100.00
	Mean	233,690.32	92.37	19,299.89	7.63	252,990.21	100.00
Mixed Livestock and Plant Production	RL	189,840.74	43,44	247,159.01	56.56	436,999.75	100.00
	RA	207,906.46	51.88	192,807.95	48.12	400,714.41	100.00
	Mean	199,830.02	47.93	217,106.08	52.07	416,936.10	100.00
Specialized Pasture Livestock	RL	223,915.13	45.79	265,040.50	54.21	488,955.63	100.00
	RA	125,843.13	30.07	292,668.30	69.93	418,511.43	100.00
	Mean	145,457.53	33.62	287,142.74	66.38	432,600.27	100.00
Specialized Perennial Plant	RL	494,018.61	100.00	0.00	0.00	494,018.61	100.00
	RA	165,874.46	93.86	10,843.34	6.14	176,717.80	100.00
	Mean	315,030.89	98.16	5,914.54	1.84	320,945.43	100.00
Average of Enterprises	RL	237,856.85	74.88	79,775.36	25,12	317,632.21	100.00
	RA	207,526.31	68.15	96,968.57	31.85	304,494.88	100.00
	Mean	221,147.81	71.25	89,247.06	28.75	310,394.87	100.00

RL: Risk-lover, RA: Risk-averse

Total private expenses by enterprise types are given in Table 7. Compared to the average of the enterprises, it was seen that operating expenses were higher in risk-averse enterprises. On average, in risk-lover enterprises, 53.64% of the operating expenses were vegetative special expenses and 46.36% were animal special expenses. In risk-averse enterprises, the share of vegetative special expenses in total expenses was 47.15%, and the share of animal special expenses was 52.85%.

When the cost distribution of enterprises according to typologies was examined, the lowest private cost value was seen in enterprises engaged in specialized perennial plant farming, and the highest private expense value was seen in enterprises engaged in mixed livestock and plant production. According to the average of the enterprises, the private expense value was lower and the production value was higher in risk-averse enterprises than in risk-lover enterprises. This showed that resource use was more efficient in risk-lover enterprises.

Table 7. Total private expenses in the enterprises

Typology Group	Risk Group	Vegetative Special Expenses		Animal Special Expenses		Total Special Expenses	
		TL	%	TL	%	TL	%
Specialized Field Crops	RL	46,939.04	89.64	5,425.20	10.36	52,364.24	100.00
	RA	46,184.23	78.18	12,891.44	21.82	59,075.67	100.00
	Mean	46,545.69	83.32	9,316.07	16.68	55,861.76	100.00
Mixed Livestock and Plant Production	RL	33,100.31	20.71	126,765.37	79.29	159,865.68	100.00
	RA	48,170.55	29.46	115,335.18	70.54	163,505.73	100.00
	Mean	41,433.27	25.60	120,445.14	74.40	161,878.41	100.00
Specialized Pasture Livestock	RL	61,565.50	42.52	83,231.43	57.48	144,796.93	100.00
	RA	27,180.37	19.43	112,722.87	80.57	139,903.24	100.00
	Mean	34,057.39	24.17	106,824.59	75.83	140,881.98	100.00
Specialized Perennial Plant	RL	68,148.86	100.00	0.00	0.00	68,148.86	100.00
	RA	35,509.75	89.50	4,166.67	10.50	39,676.42	100.00
	Mean	50,345.71	95.68	2,272.73	4.32	52,618.44	100.00
Average of Enterprises	RL	44,627.77	53.64	38,577.41	46.36	83,205.18	100.00
	RA	44,277.89	47.15	49,625.87	52.85	93,903.76	100.00
	Mean	44,435.02	49.87	44,664.00	50,13	89,099.02	100.00

RL: Risk-lover, RA: Risk-averse

Standard gross profits of enterprises and economic size groups were also determined (Table 8). In typology groups, the average ESU values of enterprises varied between 10.88 and 33.80 ESU.

The economic size value (ESU) of the enterprises in the field crop farming risk-lover group was found as 16.17 and economic size class VII, and in the risk-averse group, the economic size value (ESU) of the enterprises was 15.16 and economic size class VI.

The economic size value (ESU) of enterprises in the mixed livestock and plant production group was found as 21.99 and economic size class VII, and the economic size value (ESU) of enterprises in the risk-averse group was found as 18.83 and economic size class VII.

The economic size value (ESU) of enterprises in the risk-lover group of specialized pasture livestock was found as 27.31 and economic size class VII, and the economic size value (ESU) of enterprises in the risk-averse group was found as 22.11 and economic size class VII.

The economic size value (ESU) of enterprises in the risk-lover group of specialized perennial plant farming was found as 33.80 and economic size class VII, and in the risk-averse group, the economic size value (ESU) was found as 10.88 and economic size class V.

Enterprises below 4 ESU are very small, those below 8 ESU are small, those below 16 ESU are below average, those below 40 ESU are above average, those below 100 ESU are large, and those above 250 ESU are classified as very large enterprises. According to enterprise typologies, risk-averse agricultural enterprises in specialized field crop farming and perennial plant farming were in the below-medium business class, while other enterprise groups were in the above-medium enterprise class.

Table 8. Standard gross profits of enterprises and economic size groups

Typology Group	Risk Group	Total Production Value	Total Special Expenses	Total Standard Gross Margin	ECU Value of Gross Margin	Economic Size of the Enterprise (ESU)	Economic Size Class
Specialized Field Crops	RL	256,117.37	52,364.24	203,753.13	19,405.06	16.17	VII
	RA	250,116.60	59,075.67	191,040.93	18,194.37	15.16	VI.
	Mean	252,990.21	55,861.76	197,128.45	18,774.14	15.65	VI.
Mixed Livestock and Plant Production	RL	436,999.75	159,865.68	277,134.07	26,393.72	21.99	VII
	RA	400,714.41	163,505.73	237,208.68	22,591.30	18.83	VII
	Mean	416,936.10	161,878.41	255,057.69	24,291.21	20.24	VII
Specialized Pasture Livestock	RL	488,955.63	144,796.93	344,158.70	32,777.02	27.31	VII
	RA	418,511.43	139,903.24	278,608.19	26,534.11	22.11	VII
	Mean	432,600.27	140,881.98	291,718.29	27,782.69	23.15	VII
Specialized Perennial Plant	RL	494,018.61	68,148.86	425,869.75	40,559.02	33.80	VII
	RA	176,717.80	39,676.42	137,041.38	13,051.56	10.88	V
	Mean	320,945.43	52,618.44	268,326.99	25,554.95	21.30	VII
Average of Enterprises	RL	317,632.21	83,205.18	234,427.03	22,326.38	18.61	VII
	RA	304,494.88	93,903.76	210,591.12	20,056.30	16.71	VII
	Mean	310,394.87	89,099.02	221,295.85	21,075.80	17.56	VII

RL: Risk-lover, RA: Risk-averse

CONCLUSION AND SUGGESTIONS

In this study, agricultural enterprises operating in the TR21 Region were classified according to typologies and risk groups. It was determined that 63.77% of the enterprises were in the specialized field crop farming group, 25.45% in the mixed livestock and plant production group, 7.49% in the specialized pasture livestock farming group and 3.29% in the specialized perennial plant farming group. 55.09% of the producers were classified as risk-averse and 44.91% as risk-lover, and this distribution differed according to enterprise typologies. While the highest risk-averse producers (80%) were found in enterprises engaged in specialized pasture livestock farming, the highest risk-lover producers were found in enterprises engaged in specialized field crop farming.

The characteristics of the producers directly affect effective enterprise planning and success. In this context, the age, education level and agricultural experience of the producers in the examined enterprises

were evaluated. According to the average of enterprises, the average age of the producers was found as 56.42. The average age did not vary according to risk behavior and was determined as 55.13 for risk lover producers and 57.48 for risk-averse producers. The average age did not vary significantly according to enterprise typologies, and the highest average age (59.64) was observed in enterprises producing perennial plants. The lowest average age (53.20) was found in enterprises engaged in specialized pasture livestock farming. The rate of the producers with high school and university degrees was higher in risk-lover enterprises than in risk-averse enterprises.

71.25% of the average land asset was property and 28.75% was rented land. It was noteworthy that the land rental rate in risk-lover enterprises was higher than in risk-averse enterprises.

The education level of both enterprise owners and households in the study area needs to be increased. In this regard, it is important for agricultural education and extension experts to give more importance to educational activities for local producers. Additionally, measures should be taken to encourage the young population in enterprises to remain in agricultural production. In the short term, it will be appropriate to develop social opportunities and financial resources that will support young people to stay in the agricultural sector.

The rate of the producers having non-agricultural income was found as 36.23%. It can be said that the producers in the region pay little attention to non-agricultural works as a risk management strategy. This situation needs to be taken into account in the approaches of both the public and private sectors towards regional agriculture.

According to the average of the enterprises and all enterprise typologies, standard gross profit was found to be higher in risk-lover enterprises. The main purpose of an enterprise in its activities is profit maximization, and this is possible with the efficient use of resources. Risk-lover enterprises performed production at the optimum input level by using more inputs than risk-averse enterprises. This increased the success of risk-lover enterprises compared to risk-averse enterprises. In this study, the effect of risk behavior on enterprise success in all enterprise types was evaluated as positive, and it can be said that risk-lover enterprises were more successful.

55.09% of the producers were determined as risk-averse, and the rate of risk-lover producers was 44.91%. Risk-averse producers did not use input at the optimum production level, and it was important for risk-lover producers to adopt new technologies along with new production techniques in terms of reducing production costs and increasing efficiency. However, all innovations involve risks, and this extends the adoption period in risk-averse enterprises. In the medium term, publication studies need to be carried out to inform enterprise managers about regional conditions and the risks in production activities and their management.

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