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Research Article

THE ROLE OF AGRO-INDUSTRIES IN RURAL DEVELOPMENT: THE CASE OF KONYA

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ABSTRACT. This study aims to reveal the impact of Agro-industries on socio-economic development, development, and agriculture sector. In the research, statistical information about agricultural industry enterprises, socio-economic development, and some data related to the agricultural sector in the districts of Konya province, previous scientific studies were used. There are a total of 1,179 agricultural industry enterprises in Konya. Agro-industries are concerned with the processing and distribution of agricultural products, creating employment in both the production and marketing stages, contributing to making agriculture more profitable and sustainable. According to the correlation analysis, a highly positive and significant relationship was found between the agro-industries in the districts and socio-economic development. In addition, a positive and significant relationship was found between the agro-industry status of the districts and their status in the agricultural sector (agricultural area, milk production, agricultural tools-machinery, agricultural investments and supports, rural development investments). Accordingly, Agro-industries are very important for the development of a country or even a region.

Keywords: Development, Agro-Industries, Socio-Economic Development

INTRODUCTION

Agriculture has a significant impact on the health, welfare, and development of societies, producing necessary and beneficial nutrients and diversifying the nutrients by processing these produced substances, meeting the nutritional needs of people (Doğan et al., 2015). It is expected that the agricultural sector will continue to play an important role in the economic and social development of countries in the coming years, as in the past.

Although the agricultural sector is not the main element of development, it can be interpreted as an important tool to secure development, especially in rural areas (Dethier & Effenberger, 2012). Rural areas are socially and economically weaker than cities, and poverty is concentrated. Since the main livelihood of the people living in the region is agriculture and related industries, practices related to agriculture or Agro-industries are at the forefront of development (Akgiş & Karakaş, 2018). Agriculture and industry depend on cause-effect relationships. In any country, it is not possible to maintain agricultural activities with modern methods independently of industry.

When the economic development processes of the countries considered as industrialized are examined, it is seen that their success in the industry is largely due to the developments in the agricultural sector (Aydemir, 2008).

Since economic development is evaluated as a whole, it is not possible to talk about the development of agriculture or industry sectors alone. The development of one sector necessitates the development of other sectors. While the agricultural sector provides raw

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materials to the industrial sector, it creates a market for industrial products. However, it is not possible for agriculture to develop independently of the opportunities it provides from the industrial sector. Agriculture and industry sectors are sectors that complement each other and interact with each other. The development of these sectors brings along socio-economic development.

It is a development strategy of agro-industries, which aims to solve problems such as economic growth, unemployment, and income distribution (Dauda et al., 2022). The socio-economic development of a region also expresses the qualitative, quantitative, and structural developments that include the concepts of growth and development. This development comprises economic, social, cultural, and environmental improvements. The policies implemented to increase the region's welfare level effectively increase the socio-economic development level.

The aim of this study is to reveal the relationship between the socioeconomic and agricultural status of the districts of Konya and Agro-industries.

MATERIALS AND METHOD

The main material of the study consists of statistics, reports, relevant legislation and previous scientific studies published by relevant institutions and organizations (Ministry of Agriculture and Forestry, Turkish Statistical Institute (TUIK), The Union of Chambers and Commodity Exchanges of Türkiye (TOBB)).

In the study, 31 districts of Konya were selected as the study area. Agro-industries in these districts were calculated according to the classification made by Özaydın and Direk (2022). Agro-industries according to this classification Based on this classification, enterprises in the agricultural (agricultural and related to agriculture based on NACE codes) industrial sector in Konya were determined according to TOBB (2022) data. The socio-economic development of the districts was made according to the socio-economic development index values made by Karakayacı (2022). These index values are the population, education, bank presence, hospital presence, service sector, etc. of the districts. includes indicators. Other data of the districts in the agricultural field (Agriculture area, tool-machine availability, economic investments, machinery-equipment support, young farmer support, crop production supports, animal production supports, TÜİK (2022) and the Ministry of Agriculture and Forestry were compiled.

Correlation analysis is applied in order to examine the relations between the existing agricultural industry assets, agricultural land, equipment-machinery assets, animal production amounts, agricultural investments and agricultural supports in the districts of Konya province. Correlation analysis is a statistical method used to test the relationship of a variable with two or more variables, and to measure the degree of this relationship, if any. Pearson correlation coefficient is used when the distribution of the variables is normal, and Spearman rank correlation coefficient is used when it is far from normality. However, the decision is not made solely on the basis of this test result. Skewness and kurtosis values and histogram graphs were also examined. According to the skewness and kurtosis values and histogram graphs, the scores do not show normal distribution. For this reason, the Spearman correlation coefficient was used. The Spearman correlation coefficient is denoted by r, it consists of values between -1 and +1.

if r=-1; There is a fully negative linear relationship. That is, as one variable increases, the other decreases, conversely, as one variable decreases, the other increases.

if r=+1; There is a fully positive linear relationship. That is, as one variable increases, the other increases, conversely, as one variable decreases, the other decreases.

if r=0; There is no relationship between the two variables (Kalaycı, 2017).

The hypotheses based on this are;

H_1: There is a significant relationship between the presence of agro-industry and socio-economic development of the districts.

H_2: There is a significant relationship between the presence of agro-industry in the districts and the agricultural area.

H_3: There is a significant relationship between the presence of agro-industry and the equipment-machine status of the districts.

H_4: There is a significant relationship between the presence of agro-industry in the districts and milk production.

H_5: There is a significant relationship between the presence of agro-industry in the districts and agricultural investments and supports.

Note: For each hypothesis, H0 is used as the null hypothesis.

RESEARCH FINDINGS AND DISCUSSION

Current Situation of Agro-Industries in Konya

While some of the products obtained as a result of agricultural production reach the consumer without being involved in any process, the other part can be consumed only after processing. Agro-industries are examined in two groups as agriculture-related and agriculture-based industries. Agri-industry enterprises consist of both the industry branch that provides input to agriculture and the sector that transforms agricultural raw materials into processed and semi-finished products. Quantitatively and qualitatively more production than unit area in agricultural production, fertilization, agricultural struggle, agricultural mechanization technologies are carried out by agriculture-related industries and agriculture-based industries that use agricultural products as raw materials, process agricultural products, make them storable, usable and transportable to very long distances.

The number of enterprises in Agro-industries in Konya is given in Table 1. There are a total of 1,179 agricultural industry enterprises in Konya. 69.72% of this is agriculture-based industries (Food, beverage, textile-clothing, leather, forest products and paper industry), 30.28% is agriculture-related industries (Fertilizer, agricultural-tool machinery, pesticide industry). The majority of Agro-industries are located in Karatay and Selcuklu districts. The reason for this is that the districts are central districts and organized industrial zones.

Table 1. *The current situation of agro-industries in Konya*

İlçeler	Agro-Based Industries		Agro-Linked Industries		Agro-Industries	
	Number	%	Number	%	Number	%
Ahirli	-	-	-	-	-	-
Akören	1	100,00	-	0,00	1	100,00
Akşehir	46	80,70	11	19,30	57	100,00
Altinekin	1	33,33	2	66,67	3	100,00
Beyşehir	12	75,00	4	25,00	16	100,00
Bozkir	4	100,00	-	0,00	4	100,00
Cihanbeyli	15	88,24	2	11,76	17	100,00
Çeltik	1	100,00	0	0,00	1	100,00
Çumra	25	80,65	6	19,35	31	100,00
Derbent	2	100,00	-	0,00	2	100,00

Derebucak	-	-	-	-	-	-
Doğanhisar	2	100,00	-	0,00	2	100,00
Emirgazi	-	-	-	-	-	-
Ereğli	73	93,59	5	6,41	78	100,00
Güneysinir	-	0,00	1	100,00	1	100,00
Hadim	-	-	-	-	-	-
Halkapinar	1	100,00	-	0,00	1	100,00
Hüyük	4	100,00	-	0,00	4	100,00
Ilgin	11	91,67	1	8,33	12	100,00
Kadinhani	2	100,00	-	0,00	2	100,00
Karapinar	13	76,47	4	23,53	17	100,00
Karatay	366	65,95	189	34,05	555	100,00
Kulu	2	100,00	-	0,00	2	100,00
Meram	38	80,85	9	19,15	47	100,00
Sarayönü	12	80,00	3	20,00	15	100,00
Selçuklu	175	59,32	120	40,68	295	100,00
Seydişehir	13	100,00	-	0,00	13	100,00
Taşkent	1	100,00	-	0,00	1	100,00
Tuzlukçu	-	-	-	-	-	-
Yalihüyük	-	-	-	-	-	-
Yunak	2	100,00	-	0,00	2	100,00
Konya Total	822	69,72	357	30,28	1.179	100,00

Socio-Economic, Agriculture, Agricultural Investment and Support Situation in Konya

Since the development of a region is directly related to the increase in the population, education, health and service sectors, the socio-economic structures of the districts will have a great impact on the welfare of the region. In order to determine these effects, the development level was determined for 31 districts within the borders of Konya province, which is the research area (Karakayacı, 2022). While creating the socio-economic development index, the population of the district, the number of births and deaths, the number of marriages and divorces, the education level, the number of schools, teachers and classrooms, the population in working age, the number of bank branches, the number of hospitals and polyclinics, and course centers were taken into account. The agricultural areas of the examined districts consist of the sum of the area of fruits, beverage and spice plants, fallow, vegetables, ornamental plants, cereals and other plant products. Milk production from livestock activities, on the other hand, refers to cattle and sheep milk production. In terms of agricultural investments and supports, Agriculture and Rural Development Support Institution (TKDK), Rural Development Investments Support Program (KKYDP), KOP Regional Development Administration, Land consolidation (2008-2017), plant production supports (2002-2019), livestock supports (2002-2019), TARSİM (2006-2019). In animal production, data from cattle, buffalo, sheep and goat milk were used (Table 2).

In terms of socio-economic development index, it is seen in table 2 that the central districts of Konya, Selçuklu, Karatay and Meram, are in the first three places. While Selcuklu district ranked first with an index value of 3.6084, Karatay district ranked second with an index value of 2.2568, and Meram district ranked third with an index

value of 2.0975. The fact that these three districts are central districts has been influential in their ranking in the first place in the ranking of socio-economic development. Acar et al. (2022), it has been determined that in the first-tier developed districts in Türkiye, Selcuklu ranks 21st with a score of 2,562, in the second-level developed districts, Karatay is in the 82nd place with a score of 1,481 and Meram is in the 124th place with a score of 1.053. In addition, it is stated that Derbent district, which has the lowest socio-economic development scores, is in the 891st place with a score of -0.936. When analyzed in terms of agricultural area, Çeltik district ranks first with 2,117,602 decares in total agriculture, while Karatay district ranks second with 1,836,106 decares, and Karapınar district ranks third with 1,357,514 decares. Derebucak district is in the last place with 26,682 decares. Looking at milk production, Ereğli district ranks first with 221,870.25 tons, Karapınar district ranks second with 132,331,20 tons, and Çumra district ranks third with 132,205,30 tons. The high livestock activities in these districts increase the milk production in these districts. In addition, in the agricultural industry studies, it has been stated that the milk and dairy products industry is developed in these districts (Özaydın, 2018). Looking at the districts of Konya province, Çumra has the highest number of tractors and other agricultural implements with 85,070 units. Derebucak district has the lowest number of tractors and other agricultural implements with 968 units. In terms of agricultural investments and supports, Karatay district ranks first with 1,091,510,655 TL, Karapınar district ranks second with 685,716,597 TL, Ereğli district ranks third with 676,309,289 TL and Yalıhüyük district ranks last with 2,228,304 TL. Looking at the rural development supports, Karatay district ranks first with 54,727,107 TL, and Yalıhüyük district ranks last with 235,108 TL.

Table 2. *Socio-economic structure of districts in Konya*

Districts	Socio-Economic Development	Agricultural Area (da)	Milk Production (tons)	Tractor and Other Agricultural Equipment (Number)	Agricultural Investments and Supports 2002-2020 (TL)	Rural Development Supports 2002-2020 (TL)
Ahırlı	-0,6544	66.404	12.142,45	3.829	12.554.441	693.665
Akören	-0,5964	207.849	11.656,98	6.334	44.980.682	1.452.133
Akşehir	0,1366	453.348	46.865,59	31.442	120.172.886	20.854.381
Altınekin	-0,4162	675.989	20.214,66	57.896	372.676.811	15.830.051
Beyşehir	-0,0378	519.890	41.213,09	22.872	133.834.633	2.538.628
Bozkır	-0,4556	172.677	18.109,59	7.206	26.390.434	1.392.190
Cihanbeyli	0,2501	387.270	3.382,85	24.209	546.024.322	7.843.972
Çeltik	-0,5775	2.117.602	63.841,30	34.911	120.854.712	10.424.785
Çumra	0,4929	1.321.344	132.205,30	85.070	651.188.204	25.812.338
Derbent	-0,6996	132.953	7.509,23	4.273	18.750.953	879.910
Derebucak	-0,6778	26.682	5.137,37	968	9.121.831	875.512
Doğanhisar	-0,5629	225.822	17.838,69	9.439	40.851.570	3.138.534
Emirgazi	-0,4099	425.634	53.007,91	9.204	132.571.850	6.458.215
Ereğli	1,0310	1.042.978	221.870,25	28.998	676.309.289	37.628.161
Güneysınır	-0,5864	207.116	16.198,27	5.529	51.519.546	3.028.447
Hadim	-0,5989	81.993	5.028,77	15.638	12.684.599	2.460.994
Halkapınar	-0,7030	53.461	13.221,21	2.882	20.266.002	1.715.155
Hüyük	-0,5613	193.612	14.435,80	9.939	47.433.337	2.711.237
Ilgın	0,0069	768.227	77.918,70	38.450	216.874.522	8.438.475
Kadınhanı	-0,1353	1.077.113	51.010,41	32.746	343.293.823	6.379.092
Karapınar	0,4099	1.357.514	132.331,20	32.572	685.716.597	38.796.457
Karatay	2,2568	1.836.106	106.555,58	57.978	1.091.510.655	54.727.107
Kulu	-0,0389	1.156.724	22.429,23	19.693	283.756.204	12.195.851
Meram	2,0975	586.917	129.534,48	22.628	253.656.874	13.869.147
Sarayönü	-0,1593	1.157.253	55.359,38	21.561	300.585.301	11.907.729
Selçuklu	3,6084	636.923	23.142,92	19.588	204.735.754	13.287.527
Seydişehir	-0,1274	374.201	43.233,98	26.022	98.149.678	2.808.099
Taşkent	-0,6692	48.151	2.133,52	1.034	6.694.582	1.202.560
Tuzlukçu	-0,5721	373.734	17.822,09	9.776	78.790.459	2.406.996
Yalıhüyük	-0,7465	38.978	1.050,24	1.969	2.228.304	235.108
Yunak	-0,3039	985.794	21.699,15	26.467	303.674.563	14.780.893

Source: Compiled using data (Keçeci et al., 2021; Karakayacı, 2022; TUIK, 2022).

Correlation Analysis for Agricultural Industry Presence, Socio-Economic Development, Agricultural Area, Animal Milk Production, Agricultural Tools-Machinery, Agricultural Investments Supports and Rural Development Supports in Konya

In this part of the research, correlation analysis was conducted to determine the relationship between agricultural industry enterprises in the districts and their socio-economic development, agricultural area, milk production, agricultural tools-machinery, agricultural investments-supports and rural development supports. Spearman correlation analysis was performed because the data were not suitable for normal distribution (Table 3). According to Spearman correlation coefficient analysis, a highly positive and significant relationship was found between the agricultural industries in the districts and socio-economic development ($r_{Spearman}$=874 $p<0.01$). The increase in the amount of agricultural industry in the districts causes an increase in socio-economic development. In the study conducted by Çetin & Sevüktekin (2016) on the analysis of the differences in the level of development in Türkiye, it is stated that the high number of manufacturing industry workplaces will increase in direct proportion to the development as it will express the contribution of the industrial sector to the added value.

According to Spearman correlation analysis, a positive and significant relationship was found between the agricultural area of the districts and the number of agro-industrial enterprises (($r_{Spearman}$=602 $p<0.01$). The presence of industry is also higher in districts with more agricultural area. In the study conducted by Kavasoğlu (2007), the industrial sector It has been determined that the development of agriculture and services will positively affect the agriculture and services sectors. In addition, it has been stated that the agricultural sector has to take inputs from the industrial sector in order to continue its development and increase its productivity and it provides raw materials to this sector.

According to Spearman correlation analysis, a positive and significant relationship was found between the milk production of the districts and the number of agricultural industry enterprises ($r_{Spearman}$=602 $p<0.01$). It has been determined that the agricultural industry is generally high in the districts with high milk production. It has been determined that the presence of milk and dairy products industry is relatively higher in districts with high milk production. The reason for this is that the industries give importance to the proximity to the raw material when choosing the place of establishment. As a matter of fact, in the study conducted by Ucuncu & Bayram (2016), it was determined that the most prominent criterion in the selection of the establishment location is the proximity to the raw material.

According to Spearman correlation analysis, a positive and significant relationship was found between the presence of agricultural equipment and machinery in the districts and agricultural industry ($r_{Spearman}$=656 $p<0.01$). The surplus of agricultural industry in the region also improves the agricultural tools-machines used in that region in direct proportion.

According to the Spearman correlation analysis, a positive and significant relationship was found between the agricultural investments and supports made to the districts and the agricultural industry ($r_{Spearman}$=704 $p<0.01$). The excess of agricultural industries causes the agricultural investments and supports made in that region to be high. At the same time, a positive and significant relationship was found between rural development supports and agricultural industry ($r_{Spearman}$=727 $p<0.01$).

Table 3. *Correlation Analysis*

			Agro-Industry	Socio-Economic Development	Agricultural Area	Milk Production	Tractor and Other Agricultural Equipment	Agricultural Investments and Supports	Rural Development Supports
Spearman Correlation	Agro-Industry	Correlation	1,000	,874**	,602**	,633**	,656**	,704**	,727**
		P	.	,000	,000	,000	,000	,000	,000
		Number of districts	31	31	31	31	31	31	31
	Socio-Economic Development	Correlation		1,000	,757**	,768**	,755**	,847**	,834**
		P		.	,000	,000	,000	,000	,000
		Number of districts		31	31	31	31	31	31
	Agricultural Area	Correlation			1,000	,851**	,872**	,898**	,871**
		P			.	,000	,000	,000	,000
		Number of districts			31	31	31	31	31
	Milk Production	Correlation				1,000	,759**	,762**	,799**
		P				.	,000	,000	,000
		Number of districts				31	31	31	31
	Tractor and Other Agricultural Equipment	Correlation					1,000	,852**	,837**
		P					.	,000	,000
		Number of districts					31	31	31
	Agricultural Investments and Supports	Correlation						1,000	,896**
		P						.	,000
		Number of districts						31	31
	Rural Development Supports	Correlation							1,000
		P							.
		Number of districts							31

Note **p<0,01

CONCLUSION AND RECOMMENDATIONS

The total number of agricultural industry enterprises in Konya is 179. 69.72% of this is agriculture-based industries (Food, beverage, textile-clothing, leather, forest products and paper industry), 30.28% is agriculture-related industries (fertilizer, agricultural-tool machinery, pesticide industry). . The majority of agricultural industries are located in Karatay and Selçuklu districts.

Considering the socio-economic development indices of the districts in Konya, Selçuklu district ranks first with an index value of 3.6084, while Karatay district ranks second with an index value of 2.2568, and Meram district ranks third with an index value of 2.0975. In terms of agricultural investments and supports, Karatay district ranks first with 1,091,510,655 TL, Karapınar district ranks second with 685,716,597 TL, Ereğli district ranks third with 676,309,289 TL and Yalıhüyük district ranks last with 2,228,304 TL. Looking at the rural development supports, Karatay district ranks first with 54,727,107 TL, and Yalıhüyük district ranks last with 235,108 TL.

Correlation analysis was performed in order to determine the relationship between agricultural industry enterprises in the districts of Konya and their socio-economic development, agricultural area, milk production, agricultural tools-machinery, agricultural investments-supports and rural development supports. has been made. According to Spearman correlation coefficient analysis, a highly positive and significant relationship was found between the agricultural industries in the districts and socio-economic development ($r_{Spearman}$=874 $p<0.01$). Between the agricultural area of the districts and the number of agro-industrial enterprises (($r_{Spearman}$=602 $p<0.01$); ($r_{Spearman}$=704 $p<0.01$), between the presence of agricultural equipment and machinery in the districts and agricultural industry ($r_{Spearman}$=656 $p<0.01$), and between rural development supports and agricultural industry ($r_{Spearman}$=727 $p<0.01$) a positive and significant relationship was found.

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