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EXAMINING THE RELATIONSHIP OF SHOTGUN INDUSTRY CLUSTER AND REGIONAL DEVELOPMENT WITH A THREE STAR ANALYSIS: THE CASE OF BEYŞEHİR DISTRICT, KONYA PROVINCE

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Abstract. The concept of clustering is a concept that has many dimensions with its social and economic aspects. The theoretical background of this concept has developed within the disciplines of regional economics, which examines the regional development process with economic geography and regional development differences, which are aimed at explaining the regional distribution of economic activities and place of production factors. In general, regional development is the whole of the activities carried out in order to improve the existing standards on the economic and social basis of a certain geographical area within the borders of the country. If development activities are successful in different regions, it will be possible to achieve the development of the country. This study, it was aimed to examine the effect of the shotgun industry cluster in Beyşehir on regional development, and three-star analysis was used for this. The three-star analysis was developed by the "European Cluster Observatory" and allowed it to be a model used in the creation of potential cluster maps in the European Union. As of 2019, it has been determined that there are 165 companies engaged in production in the shotgun industry in Turkey, and 139 of these companies are clustered in the Beyşehir district of Konya. While it has been revealed that it has a very strong competitive power in exports with this cluster, it has been observed that it has a value well above Turkey's average especially in terms of added value, employment, size, and specialization.

Keywords: Beyşehir, regional development, industry cluster, Three Star Analysis, shotgun industry, economic development.

JEL Classification: R58, C38, F63.

Introduction

Economic growth and development, which consists of the production and economic planning from the industrial production areas of the cluster, has developed within the economists who focus on small development and development. About categories in more than one area of interest (Sevsay, 2016, p. 5). It is seen that a plan in the form of a targeted small-scale project planning with a certain purpose is prevailing, although it does not take the word of an agreed definition about what the cluster is in general. Many explanations of the concept of aggregation in the literature, along with illustrations, were first used by Marshall (1842–1924) in his 1890 book Principles of Economics. the economies of today's clusters, which are considered to have an important value, without taking industrial and heap (Karataş, 2006, p. 47; Sirb, 2013, p. 318; Ketels & Memedovic, 2008, p. 376).

The most distinctive feature of the cluster and the influencing factor; are close physical distances between companies, financial institutions, R&D centers, and public institutions. However, distance dimension includes technological distance (how similar or different the technology that two businesses have), talent and professional distance (how similar the personnel employed by different businesses are), market distance (different businesses have similar or interconnected customer structures). There are other dimensions as well, such as social distancing (level and type of interactions between managers and employees of different businesses). In this context, three dimensions of clustering can be mentioned and these can be listed as connections (customer-producer or worker community), geography (covering the whole

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country or regional), and life stage (existing, emerging, or potential) (Andersson et al., 2004, pp. 25–28; Yellice, 2017, pp. 32–33; Hobikoğlu & Hacıoğlu, 2011, pp. 234–236).

In terms of regional development, cluster production forms are based on flexible production; It aims to keep the production process open to constant change and to adapt the labor used to this process in order to easily adapt to alternative products and variable-scale requirements that are demand fluctuations responsive in the world. In order to provide flexibility, new technologies must be used and specialization is required for this (Mamadjanova, 2019, p. 431; Halis, 2013, p. 53). This is only possible with clustering. We can talk about the success of clustering, as flexible specialization increases competition and improves relations of solidarity and dependency.

1. Cluster and regional development

The size and diversity of the labor force, input and service pool, and the effects that reduce production costs are important in the functionality of the cluster in regional development. Cooperation in regional clustering, where it is about labor and input, is also special and important. Collaboration in clusters can be examined in two dimensions: horizontal-vertical and bilateral-multilateral. The first distinction is cooperation; deals with the direction of the relations horizontally and vertically (Andersson et al., 2004, pp. 25–28). Horizontal cooperation takes place between competing enterprises of the same production process. Vertical cooperation, on the other hand, occurs between businesses at different stages of the value creation chain (production-distribution-marketing-sales, etc.). The second distinction concerns the parties of the cooperation. Two businesses can establish formal or informal cooperation between them, as well as more businesses can cooperate to achieve a common goal (Medical Industry Cluster, 2013; Hobikoğlu & Hacıoğlu, 2011, pp. 234–236).

The reduction of development from national to smaller clusters is one of the changes and developments that occur through competitiveness and expertise. Along with these processes, the definition of regions with a driving reference in development has been brought forward and the form of interventions against regional development differences has changed. The developmental policy approach, which gives importance to regional clustering, has gained new content with the aim of improving the competitiveness of regions (Ahika Consulting Limited [AHİKA], 2016, p. 38; Özaslan & Ünlü, 2015, p. 68). In general, the new understanding of regional development refers to the relations between the regional/local geographical area and the economy and the organizations established by the actors who are predominantly in the same economic, social and cultural geography or have interests in these geographies, and the political and social organizations determined by these relations (Pınarcıoğlu, 2006, p. 290). As a result, technology, knowledge, innovation, etc., are at the center of today and sustainable activities. Elements such as It can be said that in order for these to emerge, to produce the expected benefit, to compete, and to be effective in the development process, there is a need for specialization at both the production/trade and knowledge level, and therefore, a clustering that enables them.

The developments after the 1973 oil crisis, the effects of globalization, neoliberal policies, postfordist production, and new public administration understandings have been influential in the emergence of the modern or new regional development approach, which is in question in development policies as of today. With the globalization process, national development is realized by the development of cities and regions. With the neoliberal understanding of development, many duties of the state on regional development were eliminated, and thus the state was restructured (Yılmaz, 2011, pp. 31–33).

With the advent of the new regional policy understanding, the state-driven, firm-centered, and incentive-based policy approach has been left behind, and Neoliberal policies based on small-scale business production, where regions' own potentials are revealed, have come to the fore. The new public administration approach has replaced the traditional public administration. With this understanding, the role of the state in society has been reshaped. The new public administration approach is aimed to ensure that the state is more efficient and effective in its primary functions and to improve the opportunities of citizens to participate in the administration. In addition, with this understanding, development is carried out with a bottom-up approach instead of being a top-down process determined from the center (Yılmaz, 2011, pp. 31–33).

According to the new regional development approach, the potentials within the regions should be strengthened and the decisions taken in this direction should belong to the region in question, not from outside. Thus, it is thought that self-directed economic growth and development will be more successful than policies imposed by superiors. In the new regional development theories, the structural features of the regional economies are important for development. The failure or success of a region in development largely depends on regional conditions such as political institutions, regional aids, infrastructure, skilled labor, factor prices, population density, and the existence of social classes (Kargı, 2009, pp. 23–25). With the globalization and localization movements that have started to dominate the world economy since the 1980s, investments made for internal development and increasing the quality of spaces have been given importance in regional development policies instead of direct state aid. While the distance from the labor force, raw material, and the market are taken into consideration in traditional regional policies, new regional policies attach importance to structures consisting of social relations, norms, and institutions (Eraydın, 2004, pp. 13–15). The

differences between traditional and new regional policies are presented in Table 1.

Table 1. Differences in Traditional and New Regional Policies (source: (Eraydın, 2004, p. 13; OECD, 2012, pp. 14–17; Şahin et al., 2018, p. 241)

General Concepts	Traditional Economy	New Economy
Basic infrastructure	Energy, water, road, rail, port, airport	Telecommunication, multifunctional platforms, broadband internet
local infrastructure	Industrial parks, business incubators, technoparks	Logistics areas, technology incubators, virtual networks for best practices development
Human Resources	Education and training, Adaptation of people with disabilities, Vocational training	Information and communication, continuous learning, advance determination of trade requirements financial engineering, joint support, expert support/ custom supports
Business support policy	Subsidy, tax deduction, special supports, advisory services, audit, consultancy services	Intrapreneurship, business-to-business collaboration, clustering specialization
Potential region investment attractiveness	Job creation, variable investment research,	Partnership and governance, regional studies, technological monitoring, economic intelligence, sustainable development,
The role of public administration	Competitive advantages, business support, using local resources, public service, evaluation, priorities recognition, making deals	Public-private partnerships, sampling, benefit/cost ratio of public expenditures, integration strategies, innovation

From the perspective of Turkey, regional development policies aim to ensure a balanced distribution of economic activities, resources, and population between regions. In this way, socioeconomic development of underdeveloped regions is ensured, reducing regional imbalances, evaluating the region, and spreading the development throughout the country. While preparing a plan for the development of a region, it is tried to provide rationality in the use of resources by taking into account the harmony between both national and regional development goals (Kekeva, 2021, p. 30). Regional development policies are to assist in the balanced distribution of all resources, economic activities, and populations that support development. With regional development policies, the socio-economic development of the underdeveloped regions and the uneven distribution of both population and resources among the regions is reduced, and the features that contribute to the development of the country are as follows (Turkiye İhracatcilar Meclisi [TİM], 2019, pp. 260–261; Çelikkaya et al., 2018, pp. 23–25; Akpınar, 2012, pp. 35–36):

- In regional development policies, importance is given to development policies, including not only the underdeveloped regions but also all other regions;
- Instead of redistributing growth between regions, using regions' own opportunities and resources more efficiently, increasing the regional potential and its impact on national development and thus increasing competitiveness;
- Preferring policies that encourage entrepreneurship and human capital on the development of institutional infrastructure and interregional relations;
- Determining and developing the competitive advantages of the regions and ensuring their continuity;
- Ensuring inter-institutional interaction with interfirm collaborations, technology transfers, and information flow;
- Using innovation and entrepreneurship as basic tools to reveal the potentials of the region;
- Giving more importance to spatial consistency, with the identification of intervention areas including sectors such as physical and economic infrastructure, research and technology development, tourism and environment;
- Policy implementations include an approach that is based on cooperation and negotiations, gives more authority to regions in the realization of development, ensures the participation of local governments, non-governmental organizations, and the business world, and is led by the central government in providing basic infrastructure and improving investments.

The regional development approach in Turkey came to the forefront in the post-1980 period with the loss of trust in traditional development policies from top to bottom (from the center to the local). Since traditional top-down development policies have not been successful enough in realizing economic development, innovative strategies and policies have started to be implemented from the bottom-up (local to center). The understanding of innovation envisages the establishment of institutions such as Development Agencies of a local nature rather than the central applications of international organizations. However, instead of taking advantage of the opportunities provided by the state, a development approach based on mobilizing local resources and potential has been adopted (Pehlivan, 2013, pp. 415–416). It can be said that one of the reasons for these transformations in development policies is the thought that the reasons

hindering regional development are known by the people of the region, but that these problems will be overcome with strategies and policies to be carried out together with the regional actors.

2. Shotgun ındustry sample in Beyşehir and Three Star Analysıs in regional ındustrial cluster

2.1. Shotgun industry cluster situation in Beyşehir

The manufacture of shotguns in the category of light firearms constitutes one of the sub-branches of the military industry. The enterprises and facilities operating in this sector in Turkey have created a significant clustering in the Lakes Region of the Mediterranean Region. In this region, especially in the last ten years, Beyşehir district has shown remarkable development and has become the center of the sector (Çalışkan & Manav, 2014, p. 149).

Looking at Turkey in general, approximately 140 enterprises of various sizes export shotguns. Shotgun production has significant potential in the light weapons industry, which is an important part of the arms industry and has a market of 10 billion dollars worldwide. When the lower and upper business lines are included throughout the country, approximately 300 companies operate in the hunting and shotgun industry throughout Turkey (TİM, 2019, pp. 47–61). Shotguns are exported to many countries from Turkey to various European countries, especially the USA, Canada, Lebanon, Jordan, and the Turkic Republics. Konya, which takes part in related projects in the defense industry and ranks 5th in the exports of this sector, and especially Beyşehir district, are the production centers of Turkey's non-military weapons and especially shotguns. In the towns of Huğlu, Üzümlü and Gencek of Beyşehir, the production of shotguns, whose roots date back to 1914, started in the workshops established under the village houses, then the cooperative established in Huğlu and Üzümlü and the businesses that developed later became an impetus force for the sector (Konya Sanayi Odası, 2019, p. 47)

According to the data compiled from the interviews with shotgun manufacturers during the preparation of the study, an investment of 1.2 billion TL was determined in the CNC and lathes group to be used in the production of shotguns in Beyşehir, while the investment made for the treatment and coating facilities was 30 million TL. has been found to be. In addition, 112 of the 109 companies identified are legal entities, while the remaining 17 companies operate as sole proprietorships. However, some of the mentioned businesses, whose numbers are given, are intermediary, inactive or passive, marketing/trade, dealer, small contract manufacturer, etc. is in the state. Three Star Analysis was carried out to determine the quality of the cluster in the production of shotguns in Beyşehir.

2.2. Three Star Analysis Methodology

As seen in many examples in the literature, the "Three Star Analysis" is generally preferred in determining the sectors or business lines that are assumed to have clustering potential and that are developing in this direction. The reason for choosing this model, which was developed by the "European Cluster Observatory (ECO)", is that this model is a model that is currently used in the creation of potential cluster maps in the European Union and allows the determination of agglomeration areas from different views in every sector defined by the NACE code (Şen & Sandal, 2017, p. 48; Demirdöğen, 2018, p. 94).

Size**	Dominance**	Specialization**
ei /Ei	ei /me	(ei/et)/(Ei/et)

Figure 1. Three Star Analysis Parameters*

Notes: * In this study, ">=0.01" for dominance/dominance value, ">=0.05" for magnitude value and ">=1" for specialization/specialization values accepted by MEVKA (2019) are the threshold/limit values. values are accepted.

** Turkey-wide data were obtained from TUIK and SGK.

In the three-star analysis, a concentration decision can be made by looking at three main values: "Size", "Dominance" and "Specialization". These are shown in Figure 1 (Şen & Sandal, 2017, p. 48; Seki et al., 2018, p. 22):

(Ei): Number of employment in the relevant sector throughout Turkey;

(Et): Number of employment in all sectors in Turkey;

(ei): Number of employment in a particular sector in the region;

(et): Number of employment in all sectors in the region.

Size (ei / Ei): It is the ratio of the sector employment data in the province to the total employment data of the sector in the country.

Dominance (ei / et): It is the ratio of sector employment data in the province to the total employment data in the province.

Specialization [(ei / et) / (Ei / Et)]: It shows the ratio of the employment share of the sector in the province to the employment share of the sector in the country.

2.2.1. Size

NACE 25.40.01, located in Beyşehir under the main code of NACE 25, Pistols, revolvers, shotguns, air pistols, batons, etc. The size scores of the shotgun industry defined in "Manufacture of non-military firearms and similar tools and their parts" between 2015–2019 are shown in Table 2.

A formula such as "(ei / Ei)", that is, "the ratio of the sector employment data in the province to the total employment data of the sector in the country" is used for the size value. In the NACE 25 code group, employment

Table 2. Size

SIZE				
Years	Sector employment data in the province	Country total employment data of the sector	Result	Threshold Value
2015	2457.00	3275.00	0.75	0.05
2016	2541.00	3338.00	0.76	0.05
2017	2496.00	3310.00	0.75	0.05
2018	2517.00	3591.00	0.70	0.05
2019	2643.00	3624.00	0.73	0.05

in Konya is 14,168 people in 2019. However, when we look at the NACE 25.40.01 group, 2365 people out of 2457 people in Konya are in Beyşehir. Therefore, the "size" value data set originates from Beyşehir in the aforementioned code clas-sification. Accordingly, in 2015, the magnitude value was approximately 15 times higher than the threshold value of 0.05 and realized as 0.75. According to the data obtained, NACE 25.40.01 Average 74% of employment in Turkey be-tween the years 2015–2019 is in Beyşehir. It is understood that Beyşehir shows a strong clustering in terms of size data, which is quite high.

2.2.2. Dominance

The dominance scores of the shotgun industry defined in the NACE 25.40.01 code group in Beyşehir between the years 2015–2019 are shown in Table 3.

Table 3. Dominance

Dominance				
Years	Sector employment data in the province	Total employment data in the province	Result	Threshold Value
2015	2365.00	10 448.00	0.23	0.01
2016	2365.00	10 602.00	0.22	0.01
2017	2321.00	11 289.00	0.21	0.01
2018	2441.00	10 862.00	0.22	0.01
2019	2564.00	11 629.00	0.22	0.01

For the dominance value, a formula such as "(ei / et)", that is, "the ratio of sector employment data in the province to the total employment data in the province" is used. Accordingly, the dominance value of the shotgun industry in Beyşehir was 0.23 in 2015, 0.22 in 2016, 0.21 in 2017, 0.22 in 2018, and 0.22 in 2019. Be-tween 2015 and 2019, th average dominance level was 0.22. In a situation where the threshold value is 0.01, the calculation of 0.22 for Beyşehir can be accepted as a strong indicator in terms of dominance.

2.2.3. Specialization

The specialization scores of the shotgun indus-try defined in the NACE 25.40.01 code group in Beyşehir between the years 2015–2019 are shown in Table 4.

Table 4. Specialization

Specialization						
Years	(ei/et)	Turkey Sector Employment	Country Employment	(Ei/Et)	Result	Threshold Value
2015	0.23	3275.00	393 638	0.0083	27.64	1
2016	0.22	3338.00	383 438	0.0087	25.27	1
2017	0.21	3310.00	379 581	0.0087	24.08	1
2018	0.22	3591.00	364 546	0.0099	22.33	1
2019	0.22	3624.00	367 186	0.0099	22.29	1

For specialization, a formula such as "[(ei / et) / (Ei / Et)]", that is, "the ratio of the employment share of the sector in the province to the employment share of the sector in the country" is used. Between 2015–2019, the average of specialization points was 24.32 for Beyşehir. In an environment where the threshold value is accepted as 1, Beyşehir's reaching such a high value shows that there is a strong specialization.

2.2.4. Results of Three Star Analysis

As a result of the Three Star Analysis, significant results were obtained in the Beyşehir shotgun cluster. As presented in Table 5, cluster analysis results in Beyşehir are shown in the NACE 25.40.01 subgroup. Accordingly, it has been determined that there is a very strong cluster in Beyşehir in terms of size, dominance, and specialization between the years 2015–2019 according to the standard threshold values in the code group in question.

Table 5. Results of Three Star Analysis

Year	NACE 25 Binary Code*								
	One Star			Two Stars			Three Stars		
	Size	dominance	Specialization	Size	Dominance	Specialization	Size	Dominance	Specialization
2015							0.75	0.23	27.64
2016							0.76	0.22	25.27
2017							0.75	0.21	24.08
2018							0.70	0.22	22.33
2019							0.73	0.22	22.29

Conclusions

Quite remarkable results were obtained with the three-star analysis for the relationship between the shotgun industry cluster and local development in Beyşehir. In the size data, which is the first data of the three-star analysis, "the ratio of the sector employment data in the province to the total employment data of the country", the threshold value was 5%, while this ratio was found to be 73.8% on average between 2015–2019 in Beyşehir. Accordingly, it has been determined that Beyşehir has a strong clustering in terms of size data and received 1 star for this value. While the dominance level threshold value, expressed as the ratio of the sector employment data in the province to the total employment data in the province, was 1%, the rate in Beyşehir was 22% in 2015–2019. Accordingly, Beyşehir gets one star in terms of dominance. In specialization, which is one of the most important indicators of clusters, Beyşehir's specialization score average between 2015–2019 was 24.32. In a setting where the threshold value is accepted as 1, Beyşehir's reaching such a high value shows that there is a strong specialization. Beyşehir, Size, Dominance and Specialization criteria all received three stars between 2015–2019, well above the threshold values.

When the results of the three-star analysis are examined in terms of regional development; According to the size results, it can be stated that the shotgun cluster tends to expand, which is an indication of more firm participation in the future. According to the dominance results, it can be deduced that there is a development that the effectiveness of the current cluster will be strengthened in domestic and foreign markets. According to the results of specialization, it is observed that the current cluster is in a state of continuous improvement in terms of technical capacity and human capital. When the results are evaluated in all aspects, the current cluster; It has been seen that it provides an important acceleration for the region in terms of exports, employment, competition, added value and local development. However, as these developments and indicators reveal, it is thought that it should be considered as an exemplary model for other geographical regions in terms of national development.

Quite remarkable results were obtained with the three-star analysis. While the threshold value in the size data, which is the ratio of the sector employment data in the province to the total employment data of the country, is 5%, the first data of the three-star analysis was found to be 73.8% on average between 2015–2019 in Beyşehir. Accordingly, it has been determined that Beyşehir has a strong clustering in terms of size data and received 1 star for this value. While the dominance level threshold value, expressed as the ratio of the sector employment data in the province to the total employment data in the province, was 1%, the rate in Beyşehir was 22% in 2015–2019. Accordingly, Beyşehir gets one star in terms of dominance. In specialization, which is one of the most important indicators of clusters, Beyşehir's specialization score average between 2015–2019 was 24.32. In an environment where the threshold value is accepted as 1, Beyşehir's reaching such a high value shows that there is a strong specialization. Beyşehir, Size, Dominance, and Specialization criteria all received three stars between 2015–2019, well above the threshold values.

The original value and importance of the research, the fact that the cluster was examined in the local development process by the district; is to fill the gap in the literature by examining the cluster in Beyşehir, which is above the Turkey average in many respects. Thus, it is thought that based on the data obtained about the cluster, strong awareness will be provided at the local and national levels, and the gains obtained in local development can be generalized by setting an example.

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