Article Info	RESEARCH ARTICLE | ARAŞTIRMA MAKALESİ
Title of Article	**Investigation of Planning Strategies For Storage, Distribution and Market Places Within the Scope of Urban Logistics: The Case of Izmir**
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Submission Date Admission Date	16/07/2019 / 14/09/2019
How to Cite	GULHAN, G., (2019). **Investigation Of Planning Strategies For Storage, Distribution and Market Places Within The Scope Of Urban Logistics: The Case Of Izmir,** Kent Akademisi, Volume, 12 (37), Issue 3, Pages, 546-560

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Depolama, Dağıtım ve Pazar Alanları Planlama Stratejilerinin Kent Lojistiği Kapsamında Araştırılması: İzmir Örneği[1]

Görkem GÜLHAN[2]

ÖZ:

Kent lojistiği ile etkileşime giren kentsel arazi kullanım alanları terminaller, ambarlar, şebekeler, depolama alanları, pazar alanları ve dağıtım alanları olarak nitelendirilebilirler. Bu alanlar kent içerisinde geniş yer kaplamakta olup kentsel-mekânsal etkileşim ve kentsel-erişilebilirlik üzerinde etkili olmaktadır. Sanayi toplumun yerleşmesi bütün sektörlerde üretim ve talep fazlalığı yaratmıştır. Dolayısıyla günümüzde artık depolar, pazarlama ve dağıtım alanları gayrimenkul sektöründen lojistik sektörüne kadar pek çok alanın doğrudan çalışma konusu haline gelmiştir. Lojistik hareketin incelenmesi, depoların, dağıtım merkezlerinin ve pazarlama alanlarının kapasite ve yer seçim ilişkilerinin araştırılması ve bütüncül şekilde ele alınması, kent merkezleri ile tarımsal ve kırsal alanlar arasında ilişki kurulmasında önemli analitik süreçlerdir. Depolama, dağıtım ve pazarlama alanlarının şehir planlama ile olan ilişkilerinin lojistik, yer seçimi, erişilebilirlik, kültürel, ekonomik ve sosyal açılardan ilişkilendirilmesi kapasite ve yer seçimlerinin analizinde, aynı zamanda yüksek ölçekli ilke, strateji, politika ve yaklaşımların üretilmesinde daha etkin ve isabetli kararlar verilmesini sağlayacaktır. Bu çalışmada, İzmir'de depolama, dağıtım ve pazarlama alanlarının kapasiteleri, alansal büyüklükleri ve konumları incelenmiştir. Sorunlar genel ve yerel sorun noktaları olarak ele alınmıştır. Pazar yerleri, organik pazarlar, depolama alanları, soğuk hava depoları, meyve ve sebze halleri, balık halleri ve et entegre tesislerinin üretim alansal büyüklükleri ve yerleri demografik veriler, tarımsal üretim oranları ve kentsel diğer özellikler ile karşılaştırılarak değerlendirilmiştir. Yapılan değerlendirmeler İzmir'deki lojistik hareketler, kırsal alanlardaki yük taşımacılığı özellikleri ve BV (Başlangıç-Varış) matrisleri açılarından yorumlanmıştır. Araştırma sonucunda İzmir'de depolama, dağıtım ve pazarlama alanlarının planlanması ile ilgili yaklaşım ve planlama ilkeleri/önerileri üretilmiştir. Lojistik planlama müdahale biçimlerinin yönelmesi gereken konular ve alt detay araştırma konuları ile yer seçime dair paradigmalar üretilmiştir.

ANAHTAR KELİMELER: Kırsal kalkınma, lojistik planlama, depolama, Pazar yerleri, İzmir

[1] This study has been prepared by using various data contained in the "***İzmir Sustainable Urban Logistics Plan (2019)***". I would like to thank *Dürdane DEMİRAY* who contributed to the preparation of the manuscript and *İzmir Metropolitan Municipality-Department of Transportation* for providing resources for the study.
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ABSTRACT:

Urban land use areas that interact with urban logistics are terminals, warehouses, networks, storage areas, market places and distribution areas. These areas occupy a large space in the city and influence urban-spatial interactions and urban-accessibility. The establishment of the industrial society has created an excess of production and demand in all sectors. Therefore, warehouses, marketing and distribution areas have nowadays become the direct area of study in many fields, from the real estate sector to the logistics sector. Examining the logistics movement, researching the capacity and location selection relations of warehouses, distribution centers and marketing places and addressing them in a holistic way are important analytical processes in establishing relations between city centers and agricultural and rural areas. Relating storage, distribution and marketing places to city planning in terms of logistics, site selection, accessibility, cultural, economic and social aspects will enable more effective and accurate decisions in the analysis of capacity and location choices, as well as in the production of high-scale principles, strategies, policies and approaches. In this study, the capacities, spatial sizes and locations of the storage, distribution and marketing places in İzmir are examined. The problems are approached as general and local problem points. Spatial sizes and locations of marketplaces, organic markets, storage areas, cold storage, fruit and vegetable wholesale markets, fish wholesale markets and integrated meat facilities were evaluated by comparing demographic data, agricultural production rates and other urban characteristics. The evaluations were made in terms of logistic movements in İzmir, freight transport characteristics in rural areas and OD (Origin-Destination) matrices. Approach and planning principle recommendations regarding the planning of storage, distribution and marketing places in İzmir were produced as a result of the research. Paradigms were produced regarding the selection of location and the sub-detail research topics that forms of logistic planning intervention should address

KEYWORDS: Rural development, logistics planning, storage, market places, Izmir

INTRODUCTION:

Today, logistics is not only seen as a transportation activity, but also by many marketing experts as one of the important marketing elements that provide a competitive advantage. Logistics is the process of planning, completing and controlling the cost flow and storage activities related to raw materials, auxiliary materials, products and services required for production and information in accordance with customer demands. The main objective of logistics is to reach a high level of customer service and to create a competitive advantage with the optimum use of resources and investments (Erdir, 2013). Logistics Planning deals with the planning and control of material flows from plant to facility along the supply chain and with information related to these flows in logistics organizations (Başkol, 2010). Logistics planning processes also form the basis for the most effective implementation and control of the logistics activities of enterprises (Gürgen, 2010). Storage, distribution and marketing areas are the basic elements of the logistics planning process.

Storage and cold storage usage are evaluated within the scope of storage activities. Storage is the process of storing and preserving products for later use when needed, while cold storage is defined as special purpose warehouses for more perishable foodstuffs that are usually equipped and maintained for one or more product types (Sargın & Okudum, 2014). Warehousing activities constitute the largest share among all logistics activities after transportation and distribution (Tekeli, 2017).

While the logistics sector at first only carried out transportation and warehousing services, as a result of increasing competition over time, it was diversified to cover more areas. Transportation, storage, packaging, wholesale markets, logistics center application methods, cold chains and distribution have provided serious support to the logistics sector (Akdemir, 2011). The process of transporting products through a distribution channel at a certain constant low temperature and delivering them to consumers is known as the cold chain. The establishment of cold chain facilities often requires higher capital investments (Li & Fung, 2012). Once the product is frozen, the cold chain should not be broken throughout the entire distribution channel in order to keep quality changes as small as possible (Alkusal, 2006).

Marketplaces are where supply and demand meet in the most general sense. On the one hand, markets enabled people to establish social relations, on the other hand, they served to meet the needs, and also led to the formation and

emergence of central places. The importance of markets established in rural areas as an element of the product distribution and collection system especially cannot be denied or ignored (Tunçel, 2006). Rural markets offer great opportunities for both market development and regional expansion for logistics (Deloitte Research, 2015). Factors such as location, climate, population, transportation and economic structure, as well as the rules and laws related to the issue should be taken into consideration in order to establish a market in a given locality. The increase in the number of target groups brings growth to the market and leads to diversification of the products. There are problems of planning and of forming a holistic approach regarding the marketing, storage and distribution of products that are to reach markets in Turkey.

Inadequate storage of products is one of the major problems related to both rural development and logistics activities (Tekeli, 2017). Since there is no means of high quality storage, the products lose quality during the process. There are many fields of logistic activities in the city such as warehouses, cold storage, truck garages and warehouses. Failure to store crops that cannot be sold at harvest time is among the factors that adversely affect the incomes of farmers. Farmers who are unable to meet the need for storage or are afraid of costs can only dispose of the product at low prices. In order to overcome such problems, marketing channels need to be improved, expanded and strengthened. With the acceleration of the process of opening up to the foreign market in the name of rural development, infrastructure and road deficiencies have emerged along with the rapid growth of production. Infrastructure improvements need to be made in order to solve infrastructure and road deficiencies. In the plains where agricultural production is concentrated in İzmir, inadequate accessibility, marketing and storage facilities create problems in rural development. The lack of cold storage facilities and the cold chain problems in transportation also narrow marketing opportunities. Distribution areas, storage areas and marketing areas constitute a process that needs to be integrated and planned in unison.

In this study, storage, distribution and marketing areas in İzmir are evaluated in terms of their spatial size, location and properties pertinent to the choosing of their location. First, the general and local problem areas and issues in İzmir have been identified. Afterwards, the mentioned areas were interpreted in terms of traffic and transportation logistics considering the İzmir Sustainable Logistics Plan traffic assignments. The spatial size, number and location of cold storage, storage areas, wholesale market places and markets in İzmir were investigated and evaluated in terms of problems. Then, planning approaches and principles for storage, distribution and marketing processes were produced and various suggestions were made. The storage, distribution and marketing areas were evaluated together and planning approaches and suggestions regarding urban transportation were taken into consideration. Within the scope of the study and the framework of İzmir Sustainable Urban Logistics Plan (LOPI) studies, load mobility was investigated based on rural areas within the boundaries of İzmir province. The reports, statistical data and annual investment programs prepared by the local public and legal institutions were utilized, as well as the accessible academic research and thesis studies and the body of knowledge and publications of the relevant professional chambers.

1. Methodology & Study Area

1.1. Methodology

A three-stage method was developed to examine the spatial sizes and locations of the storage, distribution and marketing areas in İzmir. This method produces paradigms, strategies, policies and parameters for the holistic planning of logistics areas. The flow chart of the method used in Figure 1 is given.

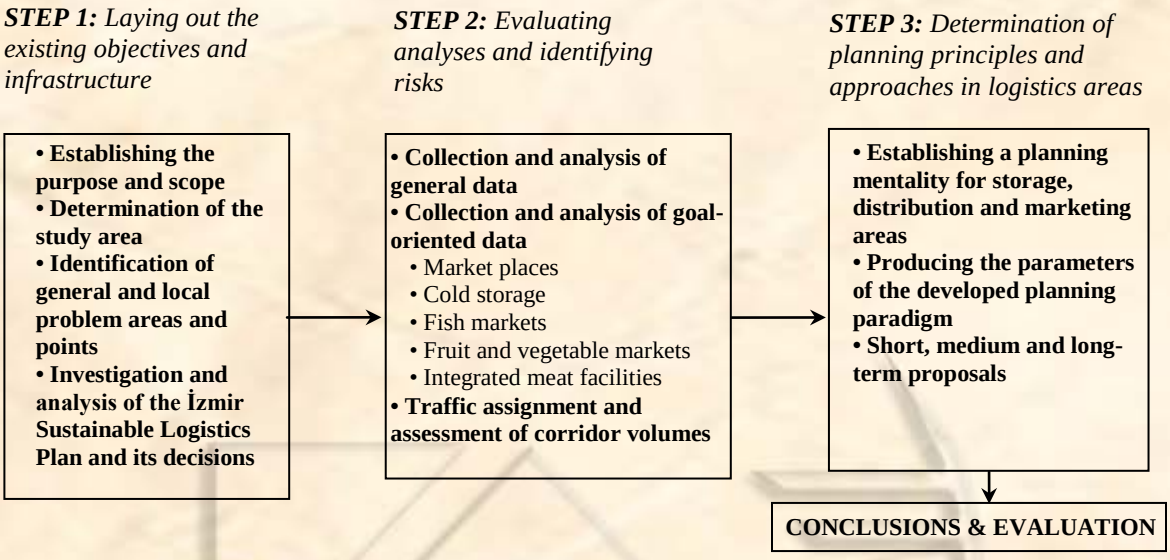


Figure 1. Flow Chart

In STEP 1; the objectives, goals and field of the study were determined. The current situation and problems of the province of İzmir regarding the logistics and transportation infrastructure in rural and agricultural areas were investigated. The reports, statistical data, annual research programs, academic researches and theses prepared by the local units of the districts and the knowledge and publications of the relevant professional chambers were examined. The Gediz Basin Protection Action Plan (2014), Küçük Menderes Basin Protection Action Plan (2014), Büyük Menderes Basin Protection Action Plan (2014), Gediz Bakırçay Basin Sustainable Development Strategy (2015), Small Menderes Basin Sustainable Development and Life Strategy (2016) and the Peninsula Sustainable Development Strategy (2014-2023) that were prepared for the development of rural areas in and around Izmir were screened for logistical decisions and determinations. Afterwards, general problems, local problem topics and problem areas were revealed through surveys and plans.

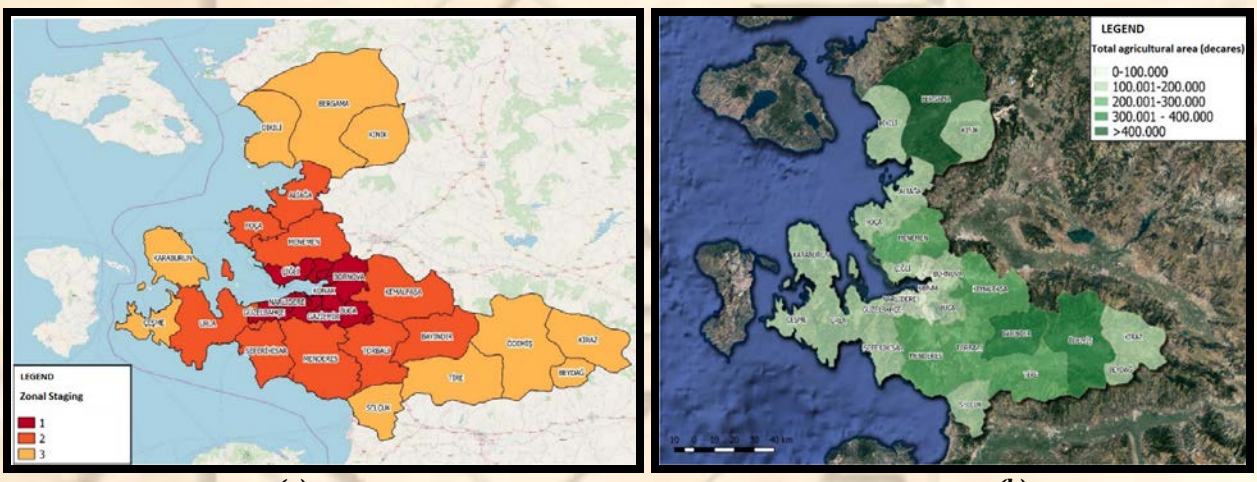
In STEP 2; goal-oriented data and information were collected. The data sets were analyzed within the scope of market areas, cold storage, fish wholesale markets, fruit and vegetable wholesale markets and meat-integrated facilities. Then, traffic assignment and corridor volumes were evaluated and interpreted in terms of storage distribution and marketing areas. The logistic infrastructures were defined, the load volumes were determined and the type and assignment of cargo and vehicles in the road networks were evaluated.

In STEP 3; the planning mentality regarding storage, distribution and marketing areas has been established. The parameters of the developed planning paradigm are presented. Short, medium and long-term proposals have been identified and focal points and nodes location recommendations for rural load movements have been developed.

1.2. Study Area

Turkey is seen as a logistics base in the world due to its advantageous position. Nowadays, the logistics sector is in the development stage, growing rapidly first through exports and imports and second through large-scale retailing and electronic commerce. The logistics sector, which integrates all advanced countries in the world and which continues to develop, has formed its infrastructure with investments in land, air, sea, railway and combined transportation between the 1980s and 1990s in our country. İzmir has many functions with the characteristics of an industry, trade, transportation, port, military and University City. As a natural harbor connected to its environment with a good transportation network, İzmir has become a large industrial and commercial city. A large share of the trade in Izmir, the third largest city of Turkey, takes place by sea transport. The harbor is an important structure in the city and is an effective part of the transportation system. 91% of exports in Izmir are carried out by sea, placing the Port of Izmir among the top container ports in Turkey. There are 291 international transportation companies operating in İzmir, 44 in international transportation and warehousing groups and around 1,700 in domestic transportation services. (Chamber of Commerce, 2019)

Taking into consideration the commercial vehicle load dynamism, clustering of logistic activities and socio-economic characteristics, İzmir was divided into three main core regions within the scope of the study. The cores are shifting from the center to the periphery towards rural and agricultural areas. The districts where rural areas are located in the third core of İzmir are Dikili, Kınık, Bergama, Karaburun, Çeşme, Selçuk, Tire, Ödemiş, Kiraz and Beydağ. The third core is a region where rural and agricultural areas are concentrated, where agricultural and agriculture-based industry is widespread in economic and social terms. Aliağa, Foça, Menemen, Urla, Seferihisar, Menderes, Torbalı, Kemalpaşa and Bayındır districts are located in both central and rural areas. The second core includes wholesale trade and non-residential urban industrial areas and occasionally agricultural activities. The districts that are located in the first core are Çiğli, Bornova, Konak, Narlıdere, Güzelbahçe, Gaziemir and Buca. The first core is the region where industrial and urban uses are concentrated. Together with the service sectors and feeder sub-sectors, it is the core. Figure 2 describes regional grading and urban cores. Agricultural areas in İzmir are mainly located in the third core region. Especially Bergama and Ödemiş districts attract attention. In the second core, Menderes, Torbalı, Kemalpaşa, Menemen and especially Bayındır are the districts where agricultural activities are high. Figure 2 shows the total agricultural area size by districts.



(a) *(b)*

Figure 2. Regional grading and urban cores ***(a)*** / Total agricultural area size by district ***(b)***

When the rate of agricultural production in Izmir is analyzed in comparison to Turkey's average, Izmir comes out strong in fruit and vegetable production. Especially in fruit production, it is apparent that Izmir performs much better than Turkey's average. In this case, opportunities for transfer facilities for cold storage and processed fruit and vegetable production increase the importance of wholesale market areas, locations, capacities and types. Agricultural products are given in Figure 3 as a comparison between Turkey and Izmir average.

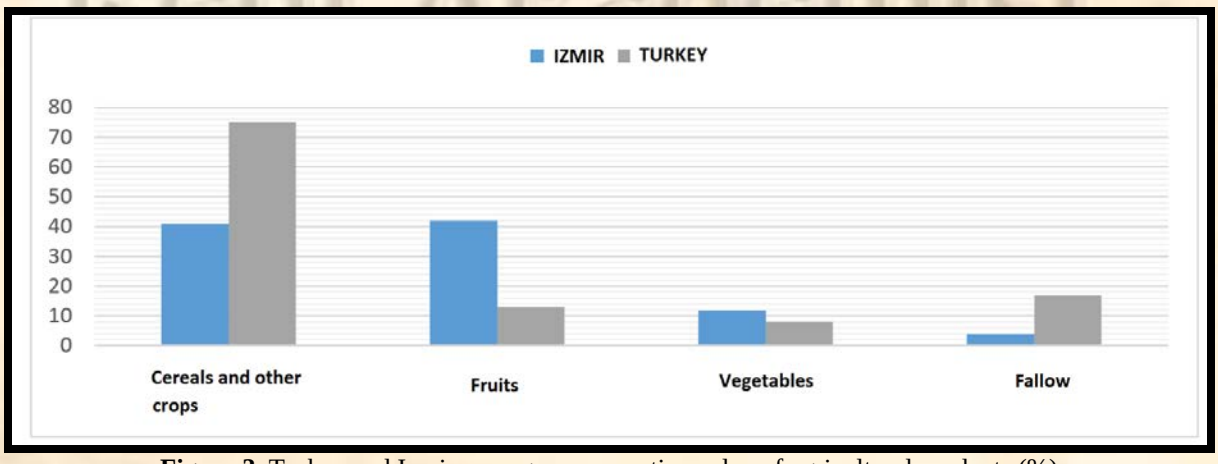


Figure 3. Turkey and Izmir average, comparative value of agricultural products (%)

1.2.1. Izmir Sustainable Urban Logistics Plan (2019)

In line with the objectives, strategies and suggestions determined by the 2016 İzmir Transportation Master Plan; the "Izmir Sustainable Urban Logistics Plan" has been prepared in order to determine the current status of logistics activities within the boundaries of Izmir Metropolitan Municipality, to identify problems and bottlenecks, and to develop solution proposals within this scope. This plan aims to develop a plan for the efficient implementation of urban logistics activities in the province by minimizing the negative social and environmental impacts. Within the scope of the plan, a strong and qualified Participation Model has been established and put into practice with the relevant stakeholders based on the principle of common reason. Logistic analysis and recommendations for the whole of the city, analysis and recommendations for rural development regions and analysis and recommendations for solid waste logistics have been made in three main categories.

In the sub-studies of the Producer Questionnaire, surveys were conducted for rural areas. A total of 603 questionnaires were conducted and the demographic characteristics of rural producers such as age, gender, education and occupation, as well as their activity areas, duration of activities, product types, and number of employees and size of production areas were aimed to be determined. The survey was conducted in three categories: firm, rural and roadside driver surveys. Rural surveys were conducted in 10 districts and 113 neighborhoods in total. The population included in the study consists of 532,330 people. The interviews were conducted in the form of face-to-face interviews between 08:00-18:00. The information related to the field of activity was determined by the questions about the distribution of the products and amounts produced by the producers, the distribution of the number of employees and the spatial size distribution of the units produced. Vehicle and shipping information was determined by questions regarding the following: Distribution of vehicle information owned by manufacturers, distribution of the number of employees, distribution of raw material supply by manufacturers, distribution of product sales by manufacturers, major problems experienced by manufacturers during the sales and procurement process, the provinces where the products came from / visited districts, type of plant from which products are delivered, number of vehicles incoming / outgoing to manufacturers, total number and types of vehicles shipped annually in the previous year and total number of vehicles supplied annually in the previous year.

2. Generation of Analysis and Planning Parameters

2.1. Determination of General and Local Problem Points

The ongoing problems in İzmir since the 1970s are the following: marketing problems, transportation and infrastructure problems, storage problems, problems arising from the decisions and applications of location selection, agricultural product diversity problems, problems in terms of agriculture and animal husbandry and emerging problems related to the management of market areas and marketing. The mentioned problem areas and issues are listed below. When the problems in İzmir were further investigated through surveys and researches, certain local problem points have been identified. These problems can be grouped as marketing points, local points of transportation and infrastructure problems, points of marketing and storage problems, health concerns in terms of agriculture and animal husbandry, and market problems and management problems caused by marketing. The mentioned local problem areas and issues are provided in Table 1.

Table 1. Determination of General and Local Problem Points

Local Problem Points and Subjects	General Problem Points and Subjects
Inadequate accessibility, marketing and storage facilities in plains where agricultural production is concentrated	In Bergama, there has been a lack of direct marketing of agricultural products.
Inadequate cold storage facilities and cold chain problems in transportation narrow marketing opportunities.	It is reported that trying to market products with connections outside Bergama creates financial and organizational problems.
Logistic points in İzmir are clustered in the city center and are intertwined with residential areas.	Due to the difficulties in receiving payments, it is known that agricultural producers are looking for and seeking direct access to consumers.
Intertwining of city transport with freight transport.	In Ödemiş District Municipality, it is expected that technology and support of the municipality will be improved in transporting and preserving milk and dairy products from the point of production to the market without breaking the cold chain.
Organization problems in fairs and exhibitions taking place in the study area	It is understood that sales levels remain low due to insufficient marketing areas in Beydağ.
There is a lack of opportunities to meet the demands of rural development due to the low diversity of agricultural products.	It was found that the insufficient marketing areas in Ödemiş prevented the evaluation of sales potentials.
Logistic points in İzmir are clustered in the city center and are intertwined with residential areas.	It has been found that the cost of animal feed increases the costs of dairy products and therefore the milk producers are in a difficult situation. There is an expectation of reducing feed costs and increasing accessibility to raw materials.
Intertwining of city transport with freight transport.	It was determined that the cheapness of milk prices made commercial and economic enterprises difficult and that there is an expectation of increasing the share of milk sales that producers receive.
	There have been feedbacks regarding the unbalanced input and output costs and the municipalities putting producers in a difficult position through the private sector.

Izmir's success in the logistics of milk and milk products is exemplary in Turkey. There are many stages that milk and dairy products go through in the process of reaching their destination, from the producer to the consumer, and it is expected that local government support, which is significant in almost every one of these stages, will be increased. There are expectations that the local administration, which is very active in the process from the producer to consumer, will increase its predominance in this area and spread social municipalism.

The Tire Cooperative in İzmir in particular, as well as in certain other regions, carries out milk shipments by using double-walled milk cooling tanks, but the lack of a network of closed transport trucks with cooling features prevents the further development and spreading of the processed food sector. The problems of producers of silage maize and fodder, which can be considered as the raw material of the milk production and consumption sector, merit attention. Producers have difficulty accessing barley flakes and corn flakes or silage maize, obtaining them without interruption, and especially purchasing them economically. There are expectations from local administrations. Small producers are especially weak in transporting their products to marketing areas, and selling and exhibiting them at affordable prices. Small producers who fail to manage this organization are forced to sell their goods to brokers at low prices when they do not have the chance to store their goods.

2.2. Evaluation of Traffic Assignments in Rural Areas

In İzmir Sustainable Logistics Plan studies, transportation habits were determined by traffic and section counts and roadside surveys within the scope of assessing the current situation. Then, traffic assignments and calibration

procedures were performed. Demand estimation methods and projections were obtained and travel production and distribution matrices were estimated. Later, traffic assignments were made for 2030 and the demand on urban freight corridors was determined. There are three main corridors in İzmir originating from the rural areas, from the third core to the center, the first and second cores. These are the northern corridor from Bergama, Kınık regions towards the center, the eastern corridor from Ödemiş Tire regions and the western corridor from Karaburun-Çeşme regions. Figure 4 shows the results of the weekly traffic assignment of the freight vehicle corridors in the rural areas.

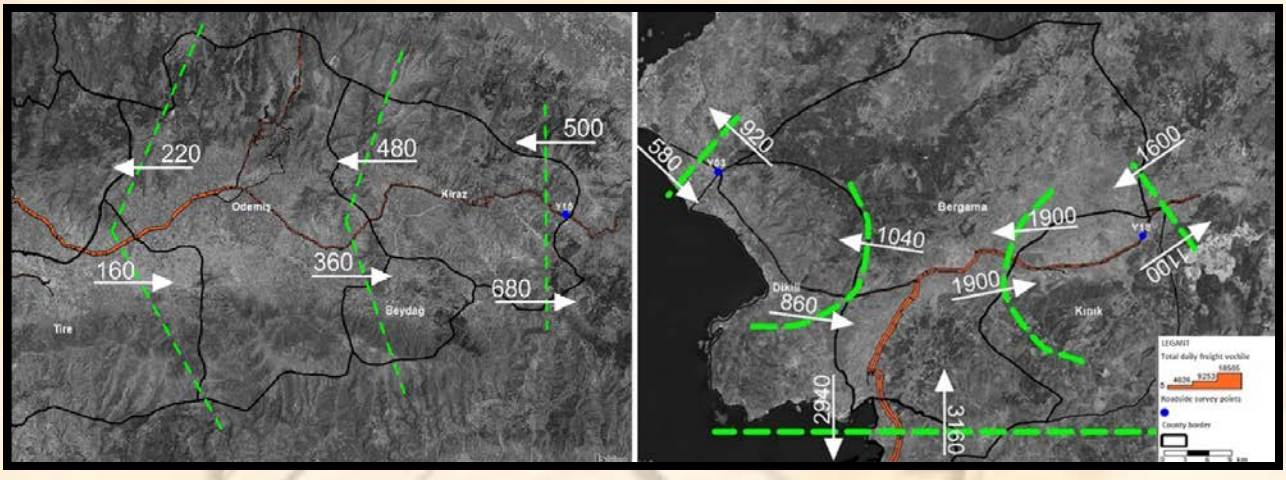


Figure 4. Results of weekly traffic assignment in freight vehicle corridors in rural areas (LOPI, 2019)

Towards the center, the internal mobility decrease in the direction of Ödemiş to Tire. Towards the periphery, the same reduction in rotation is observed. Especially after Ödemiş, the transition to Beydağ and Kiraz decreases intensely. The increase from Kınık to Bergama gives way to a decrease when it is directed to the Dikili axis and increases again when it moves towards the center. The number of vehicles coming from the south is divided into north and west directions. Return traffic operates in direct proportion. In the Çesme-Karaburun region, it is seen that the transit of freight vehicles is low and they are not located on the main agricultural product corridor.

2.3. Evaluation of Traffic Assignments in Rural Areas

Table 2 shows the regular market areas and organic market areas in the 2nd and 3rd cores. Data were obtained by map base metering. The districts in the first core are presented in total. With the help of the obtained data, the size of the market area per person and the number of people per market were calculated. Figures 5 and 6 show the number of people per market and the number of market areas per person.

Table 2. Market Place Data in Izmir

District	Population	Market Place(m^2)	Market Place Amount	Organic Market (m^2)	Marketplace Area Per Person	Number of People Per Marketplace
Aliağa	95,392	20,232	4	0	0.21	23,85
Bayındır	40,584	3,965	4	0	0.10	10,15
Bergama	103,185	27,992	1	2,541	0.27	103,19
Beydağ	12,507	-	-	0	0.00	0,00
Çeşme	43,489	585	7	109	0.01	6,21
Dikili	44,172	5,359	4	0	0.12	11,04
Foça	33,131	4,636	5	0	0.14	6,63
Karaburun	10,603	415	1	104	0.04	10,60
Kemalpaşa	106,298	13,025	10	0	0.12	10,63
Kınık	29,803	-	-	0	0.00	0,00
Kiraz	43,989	350	1	0	0.01	43,99
Menderes	93,796	10,297	4	0	0.11	23,45

Menemen	174,564	39,827	10	0	0.23	17,46
Ödemiş	132,511	7,592	13	0	0.06	10,19
Seferihisar	43,546	15,606	3	294	0.36	14,52
Selçuk	36,360	6,479	8	0	0.18	4,55
Tire	84,457	440	2	0	0.01	42,23
Torbalı	178,772	4,257	19	0	0.02	9,41
Urla	66,360	6,974	4	107	0.11	16,59
1st Core	2,947,000	120,321	55	1,504	0.04	53,58
				Average of 2nd and 3rd Cores	**0.11**	**19,19**

As can be seen from Figure 5, a market is being established for an average of 19 thousand people throughout the İzmir province. This value is calculated as approximately 54,000 in the first core defined as urban area. The decrease in market areas in urban areas and the selling of fresh vegetables and fruits in markets cause the bazaar culture to disappear in urban areas. There is no market place in the inventory of big city municipalities in Beydağ and Kınık districts throughout the province. Organic markets, which have become widespread in recent years, are established in 5 districts throughout the province. On the basis of the markets in the 2nd and 3rd cores, the average market area per capita is 0.11 m^2, while this figure decreases to 0.04 m^2 in urban areas.

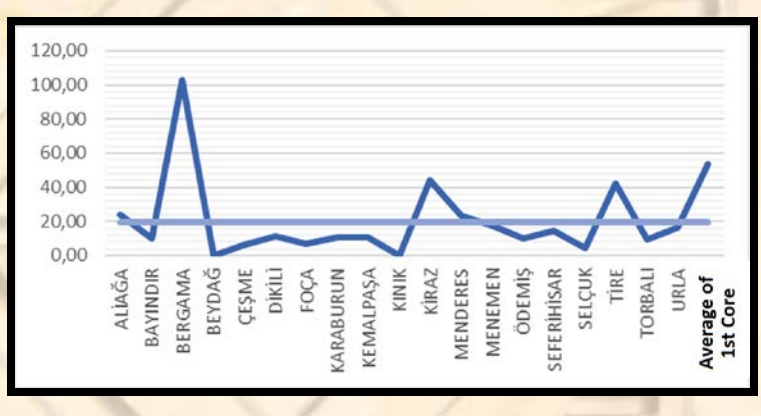


Figure 5. Number of people per market (1000 people)

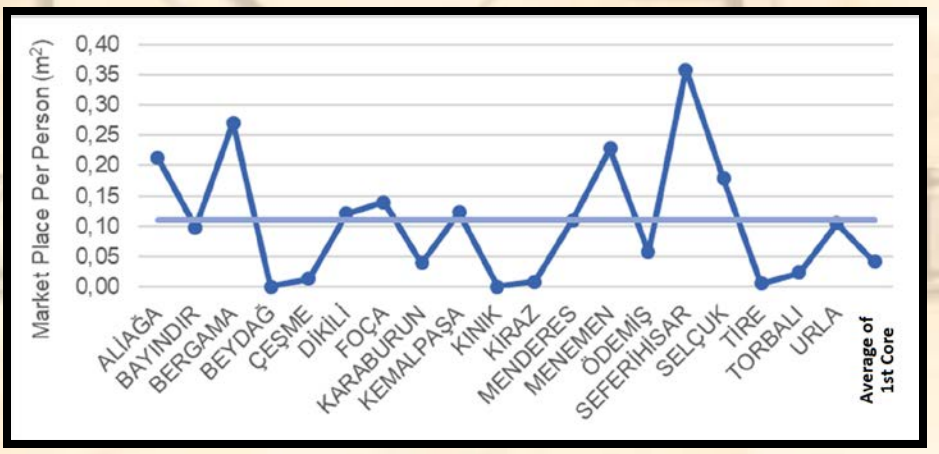


Figure 6. Market place per person (m^2)

When Figure 5 and Figure 6 are examined, it is seen that the highest number of people per market is in Bergama. Market place per capita is highest in Bergama and Seferihisar, and mostly outside the main corridor lines. Figure 7 shows the spatial distribution of the market and organic market places in İzmir.

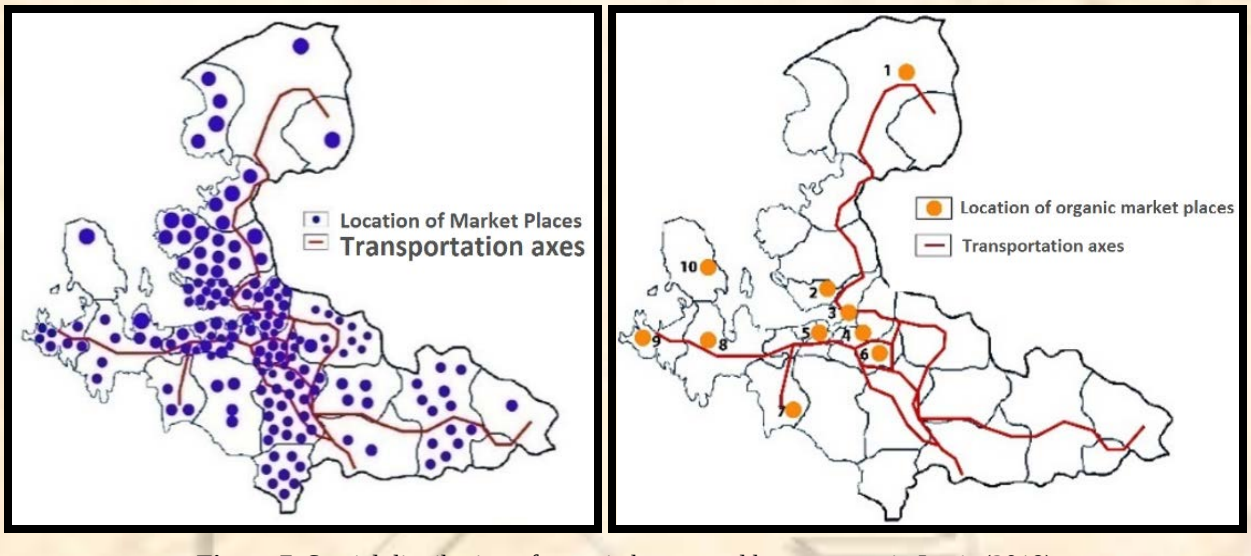


Figure 7. Spatial distribution of organic bazaar and bazaar areas in Izmir (2019)

As a result of the analyses, it can be assessed that the rural producers bring their products directly to the consumers, that the market places are spread unevenly throughout the province, and that the number of markets and spatial sizes are insufficient in the urban area.

In this perspective;

• Market opportunities in Kınık and Beydağ districts in rural areas should be researched and new investments should be planned with a detailed study,

• In the touristic districts such as Çeşme and Foça, if a detailed examination of market places determines the need for market places, this need should be satisfied by seasonal arrangements and the development of multi-purpose areas,

• The bazaar culture, which has a tendency to decline, should be revitalized by increasing the market places where consumers and rural producers can come together in urban areas,

• Regular, open-air or covered market places and the logistic movements in the process of delivery of products to consumers as part of urban logistics should be more regular and controlled and the effects of fresh fruits and vegetable transportation on traffic and the environment should be reduced.

Within the scope of the study, a macro level evaluation was made and some recommendations were made about market places. However, with detailed needs analysis and site selection decisions, important and concrete projects should be developed both for rural producers and urban logistics activities.

2.4. Analysis of Fruit, Vegetable and Fish Wholesale Markets and Generation of Strategic Approaches

The commercialization and placing on the market of products in agricultural and animal production regions is realized through wholesale markets. In the table below, the spatial sizes of vegetable, fruit and fish wholesale markets in the 2nd and 3rd cores are given. In the 2nd and 3rd cores in the study area, there are vegetable and fruit wholesale markets in an approximately 85,000 m^2 area in 10 districts. It is calculated that there is a surface area of 0.06 m^2 of wholesale market area per hectare when compared with agricultural areas. Table 3 shows the current status of fruits, vegetables and fish wholesale markets.

Table 3. Current status of fruit, vegetable and fish wholesale markets

District	Fish Wholesale Market (m^2)	Vegetable and Fruit Wholesale Market (m^2)	Agricultural area (ha)	Population
Aliağa	0	0	58,000	95,392
Bayındır	0	489	100,327	40,584
Bergama	0	4,795	256,640	103,185
Beydağ	0	0	15,750	12,507
Çeşme	145	720	2,595	43,489
Dikili	67	0	66,363	44,172
Foça	161	0	20,326	33,131
Karaburun	194	0	240	10,603
Kemalpaşa	0	1,847	18,099	106,298
Kınık	0	11,986	62,527	29,803
Kiraz	0	10,445	111,056	43,989
Menderes	0	1,805	116,462	93,796
Menemen	0	11,210	126,097	174,564
Ödemiş	0	29,583	164,182	132,511
Seferihisar	631	0	5,612	43,546
Selçuk	1,876	0	11,350	36,360
Tire	0	12,726	105,638	84,457
Torbalı	0	0	150,247	178,772
TOTAL	**3,539**	**85,606**	**1,400,141**	**1,373,519**

When Table 3 is examined, it is seen that the largest fish wholesale markets are in Selçuk and Seferihisar and the fruit and vegetable wholesale markets are foremost in Ödemiş and then in Kınık, Kiraz, Menemen and Tire. Figure 8 shows the spatial distribution of fruit, vegetable and fish wholesale markets in İzmir.

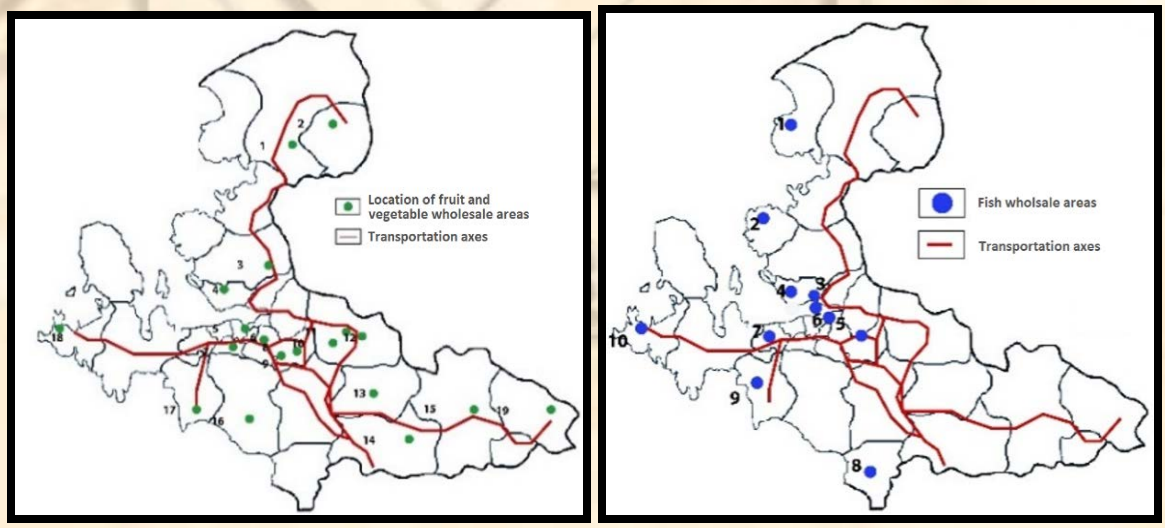


Figure 8. Spatial distribution of fruit, vegetable and fish wholesale markets in İzmir

When Figure 8 is examined, it is seen that both fish wholesale markets and fruit and vegetable wholesale markets concentrate in the first core and become less frequent towards the peripheries, namely the 2nd and 3rd cores. The expansion of the wholesale markets leads to a reduction in the transportation costs borne by the producers of the products and a reduction in the distance traveled, thus contributing to products reaching the consumers more

economically. In this context, detailed demand analyses must be conducted to investigate the feasibility of micro-scale wholesale market structures. These studies should be carried out both on a product basis and on a cultivated area basis. It is considered that the planned micro wholesale markets will be beneficial in urban logistics processes and in supporting the producers.

2.5. Current Situation of and Recommendations for Cold Storage and Integrated Meat Facilities

The existence of integrated facilities and storage areas is of paramount importance for processing agricultural and animal products and supplying them to the market in accordance with demand. In addition to the increase in the added value obtained from the products, the distribution of these plants in the İzmir province, which forms a cross-section with the fields and the producers, is provided in Table 4. Both cold storage and integrated facilities are concentrated in the 1st core. Since the urban area is the region where the majority of the population lives, warehouse and processing facilities are concentrated in this region both in terms of consumption and in terms of national and international trade. These facilities are concentrated in rural and transition regions in Kemalpaşa, Menderes, Menemen, Ödemiş, Selçuk and Torbalı.

Table 4. Status of Cold Storage

District	Cold Storage (m^2)	Number of Cold Storage Depots	Integrated Meat Facilities (m^2)	Agricultural Area (ha)	Population
Aliağa	0	0	0	58,000	95,392
Bayındır	0	0		100,327	40,584
Bergama	0	0	0	256,640	103,185
Beydağ	0	0	0	15,750	12,507
Çeşme	0	0	0	2,595	43,489
Dikili	0	0	0	66,363	44,172
Foça	0	0	0	20,326	33,131
Karaburun	0	0	0	240	10,603
Kemalpaşa	225,718	13	18,439	18,099	106,298
Kınık	0	0	0	62,527	29,803
Kiraz	0	0	0	111,056	43,989
Menderes	13,784	5	900	116,462	93,796
Menemen	0	0	614	126,097	174,564
Ödemiş	0	0	9,189	164,182	132,511
Seferihisar	0	0	0	5,612	43,546
Selçuk	8,655	3	0	11,350	36,360
Tire	0	0	376	105,638	84,457
Torbalı	22,745	3	0	150,247	178,772
Urla	0	0	0	8,630	66,360
TOTAL	270,902	24	29,518	1,400,141	1,373,519

Figure 9 shows the spatial distribution of cold storage and integrated meat facilities in İzmir.

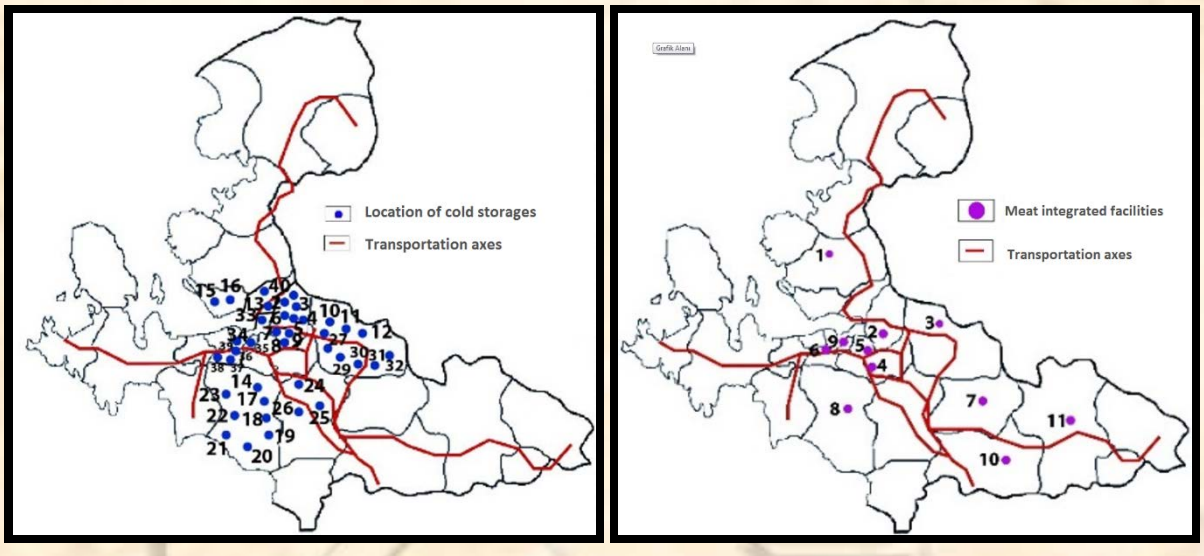


Figure 9. Spatial distribution of cold storage and integrated meat facilities in İzmir

Figure 9 shows that cold stores are predominantly located in the first core, almost absent in the third core, and sparsely present in the second core. This shows that there are no cold stores in the rural areas and therefore that there is a lack of cold chains. The distribution of integrated meat facilities has been observed as sparse and homogeneous.

Storage and processing of the products in the place where they are produced is an approach that increases competitiveness and the revenues of the producers due to the elimination of transportation costs. For this reason, yields and added value should be increased in agriculture and animal husbandry by saving unnecessary transportation costs and product losses by making the selection of type and place of storage and processing facilities through detailed studies.

CONCLUSION:

The largest urban freight transport corridor in İzmir is the northern (Bergama-Kınık) region and the eastern (Tire-Ödemiş) region. Especially in addition to milk and dairy products, fruit and vegetable production is seen as the leading product groups in rural development. It is considered that the holistic approach should be important in the storage, distribution and marketing of agricultural products and that capacity analyses should be calculated in unison.

Important needs and concrete projects for both rural producers and urban logistics activities should be developed with detailed needs analysis and site selection decisions for market places. In the planning of cases, detailed analyses should be carried out and demand feasibility analyses and feasibility of micro scale state structures should be investigated. Storage and processing of the products in the place where they are produced is an approach that increases competitiveness and revenues of the producers due to the elimination of transportation costs. For this reason, yield and added value should be increased in agriculture and animal husbandry by saving unnecessary transportation costs and product losses by making selection of type and place of storage and processing facilities through detailed studies. Expansion of market places, storage areas and processing plants in rural areas will improve urban logistics processes and create an approach that can create great competitiveness among producers. The spreading of the bazaar culture in the urban region and the regular and economic delivery of products in a planned and economical manner will increase the quality and efficiency of the logistics processes.

In İzmir, it is necessary to support the producer organizations in general, to improve marketing channels, to strengthen processes in production areas, to ensure sustainability, to plan raw materials and equipment logistics, to improve transportation and urban logistics activity areas and to plan the scope and location selections of the agriculture based areas.

In İzmir, it is considered that the local administration should manage the process in full by realizing the technical infrastructure opportunities that will support all stages of the process in transporting dairy products from producers to

consumers. At the same time, it should take advantage of the profitability of processed food by establishing the cold chain network and the profit obtained from this process should be used to support the producers. The municipality should take the initiative in providing sustainability, profitability and standardization in the provision of animal feed to local producers and farmers. In selecting the investments to be made, the continuity of the investment, initial investment cost, operating cost, economic benefit, social benefit, operational difficulties, employment contribution, spillover potential and its impact on the municipal image should be assessed.

REFERENCES:

Akdemir, H.Y. (2011). *Lojistik Sektörü İşgücü Profilinin Değerlendirilmesi İzmir İli Örneği, [Logistics Sector Workforce Profile Evaluation Of Izmir Province Example]*. (Master Thesis). Dokuz Eylul University Graduate School of Social Sciences, Izmir.

Alkusal, M. (2006). *Dondurulmuş gıda sektöründe bütünleşik lojistik ilişkilerin lojistik hizmet kalitesine ve performansına etkisi [The Impact Of Integrated Logistics Relationships on Third-Party Logistics Service Quality And Performance In The Frozen Food Sector]*. (Doctoral dissertation). Dokuz Eylül University Graduate School of Social Sciences, Izmir.

Başkol, M. (2010). *Lojistik ve lojistik yönetimi [Logistics And Logistics Management]*. Published by Bartın University Graduate School of Economics and Administrative Sciences in the name of Prof. Dr. Mahmut KARTAL (Dean) Editor: M. Sinan BAŞAR, 47.

Chamber of Commerce, Izmir (İZTO), (2019). *Bilgi Bankası, Lojistik [Data base, logıstıcs].* (Citation Date July 07, 2019). Site Address: http://www.izto.org.tr/tr/izmir-lojistik

Debrezion, G., Pels, E., and Rierveld, P. (2007). The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-analysis. *Journal Real Estate Finance Economy*. doi:http://dx.doi.org/10.2139/ssrn.516742

Deloitte Research (2015). Investment Promotion Report of China's Logistics Industry 2014- 2015, Simplified Version, pdf.

Erdir, A. (2013). *Kentsel lojistik: İzmir ili için bir uygulama [City Logistics: An Application For İzmir]*. (Master Thesis). Dokuz Eylul University Graduate School of Social Sciences, Izmir.

Galipiyamu, T. (2017). *Çin Halk Cumhuriyeti'nin lojistik sektörünü geliştirmek adına uyguladığı destekler [Logistics of China People's Republıc sector development support]*. (Master thesis) Istanbul Ticaret University Graduate School of Social Sciences, Istanbul.

Gürgen, E. (2010). Lojistik Planlama ve Modelleme [Logistics Planning and Modeling]. *Mersin Logistics Professionals*. Mersin Chamber of Shipping and Mersin Chamber of Commerce and Industry Publications, P:28-40.

İzmir Büyükşehir Belediyesi (Izmir Metropolitan Municipality), (2015). Gediz - Bakırçay Havzası Sürdürülebilir Kalkınma Stratejisi [Sustainable Development Strategy of Gediz - Bakircay Basin].

Izmir Metropolitan Municipality (2017). *İzmir Sürdürülebilir Kentsel Lojistik Planı [İzmir Sustainable Urban Logistics Plan.* (Citation Date July 07, 2019). Site Address: https://www.izmirlojistikplan.com/lopi-2030

İZKA, (2014). Yarımada Sürdürülebilir Kalkınma Stratejisi [Peninsula Sustainable Development Strategy] 2014-2023.İzmir. doi: http://www.izka.org.tr/. Isbn:978-605-5826-13-0

Li& Fung (2012). China's Logistics Industry Update 2012, June 2012 pdf.

Pazar Yerleri Hakkında Yönetmelik [Regulation on Market Places.] (2012). Number 28351.(Citation Date July 07, 2019). Site Address: http://www.resmigazete.gov.tr/eskiler/2012/07/20120712-13.htm

Sargın, S., & Okudum, R. (2014). Isparta İlinde Soğuk Hava Depolarının Kuruluşu, Gelişimi ve Gelişime Etki Eden Faktörler [Construction and Development of Cold Stores and the Determining Factors on them in Isparta Province]. *SDU Faculty of Arts and Sciences Journal of Social Sciences*. 2014(31), 111-132.

The Gediz Basin Protection Action Plan (2014). TÜBİTAK MAM Environment and Clean Production Institute.

Tekeli. İ. (2017). *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi [An Agricultural Development and Settlement Strategy for Izmir Province / City*]. Izmir Akdeniz Academy.

Tunçel, H. (2006). *Türkiye'nin Kırsal Pazar Bölgeleri [Turkey's Rural Market Regions]*. Fırat University, Faculty of Arts and Sciences, Department of Geography, Elazığ.

Tübitak Mam Environment and Clean Production Institute, (2009). Büyük Menderes Havzası - Havza Koruma Eylem Planları [Preparation of Basin Conservation Action Plans in Büyük Menderes Basin].

Tübitak Mam Environment and Clean Production Institute. (2010). Gediz Havzası - Havza Koruma Eylem Planları [Gediz Basin Protection Action Plans]

Tübitak Mam Environment and Clean Production Institute. (2009). Küçük Menderes Havzası Havza Koruma Eylem Planları [Küçük Menderes Basin Basin Protection Action Plans]

Velibeyoğlu, K., Özdemir, S., Baba, A., Arsan, Z. D., Duran, H. E., Kaplan, A., ... & Esetlili, T. (2016). İzmir Küçük Menderes Havzası Sürdürülebilir Kalkınma ve Yaşam Stratejisi [Sustainable Development and Life Strategy of İzmir Küçük Menderes Basin]. İzmir Metropolıtan Munıcıpalıty, İzmir.