

# ANALYZING LANDUSE TYPES AFFECTING THE SPATIAL DISTRIBUTION OF ARCHITECTURE SECTOR IN ISTANBUL

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## ABSTRACT

From the beginning of the 21st century, the creative economy has arisen in European and American countries; besides, this new system started to shape the social, physical, economic, and cultural patterns of cities. In Turkey, encouraging the creative economy to participate in the global market became an important concern of policy-makers especially after the 1990s, and Istanbul has a specific role as the creative capital of Turkey in this competitive atmosphere. Also, the architecture sector that consists of the value-adding process of art and knowledge is one of the most developing creative industries in the world; moreover, this sector generally concentrates more in Istanbul compared to other cities of Turkey. When the spatial distribution of all creative industries in Istanbul is examined, it is clear that they densify in the central districts of Istanbul; however, they also started to expand towards the peripheral districts especially after 2009. This tendency shows itself also in the architecture sector. Therefore, the main motivation of this study is exploring the spatial distribution of the architecture sector in Istanbul. For this purpose, the research method contains two steps. Firstly, the map for the distribution of architecture sector in the city is produced through certain addresses of architecture, urban planning, and landscape architecture firms by using the geocoding method. Secondly, the spatial relationship between locations of firms and determined land use types that are proximity to recreation areas, transportation routes, public establishments, and universities are analyzed through the Network Analysis in ArcGIS.

**Key words:** Creative Industries, Architecture Sector, Location Distribution, Istanbul, Network Analysis

## 1. INTRODUCTION

The creative economy, which started to develop especially in European countries since the end of the 20th century, has gained importance throughout the world

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(Atkinson & Easthope, 2009; Denning, 2012). In parallel with the developing new economic system, factors such as raw material, accessibility, labor pool, which had a great importance in the location decisions of companies in the past have started to give way to knowledge, ideas, originality, and creativity (Sharp, Pollock, & Paddison, 2005). This new system began to show itself as the rise of the creative economy in the 21st century with its positive and negative effects on physical, social and economic structure of cities (Sands & Reese, 2008).

In the direction of the creative economy, the creative industries, which consist of all kinds of activities that put culture, creativity or technology at the center of production and consumption processes, cover various sectors (Flew, 2012). Florida (2002) grouped creative industries as the "creative core", which is directly based on art and ideas, and "creative professionals", where artistic products are processed and converted into added value. So, creative sectors consist of a wide range from arts, culture and entertainment to science and technology sectors; besides, there is a mutual relationship between these different sectors, especially from the creative core to professionals (Howkins, 2001). Regardless of class and type, all creative sectors have started to dominate the urban market, and they have provided both social and spatial prosperity in cities. Therefore, they started to engage more attention in the production process of urban policies (Rosselló & Wright, 2010). Today, cities have a critical role in balancing creativity, human capital and economic development (Anderson & Mellander, 2011). Also, having more tolerance, diversity, talent and technology has become a fundamental requirement for attracting creative sectors (Landry, 2000). Thus, urban planning and design approaches began to gain new meanings and methods under the pressure of these new developments and requirements that emerged in the 21st century (Mommass, 2004).

Another significant issue that appeared in the development process of creativity is the distribution of creative sectors in cities (Khoo, Badarulzaman, Samat, & Dawood, 2016). Despite the judgments that creative sectors can develop flexibly without the need for a specific position in cities (Kelly, 1998), the existence of clusters such as Silicon Valley, Hollywood, and Wall Street shows that creative sectors tend to locate in certain areas of cities (Florida, 2003; Hutton, 2004). Moreover, these sectors tend to take advantages of the results of agglomeration such as highly skilled labor market, knowledge spillovers, experience sharing, and strong communication with other firms (Lorenzen & Frederiksen, 2008). On the other hand, although there are several regional and local indicators such as accessibility, urban atmosphere, governmental policies, and global linkages that directly affect the clustering tendency of creative economies (Flew, 2002), the location decisions of creative sectors can be changeable according to expect-

tations and desires of creative workers from the city which can be also variable depending on the creative sector type (Landry, 2000).

The architecture sector contains architecture, urban planning, and landscape architecture activities (European Commission, 2008); and, it takes place in all classification types of creative sectors; Florida (2002) evaluated the architecture sector from an artistic perspective and included them in the “creative core” group. On the other hand, the UK Department of Digital, Culture, Media, and Sport, has separated these professional groups from other art-oriented sectors and defined this sector as a value-adding process where ideas are processed and turned into a concrete product (DCMS, 1998). When these two approaches are combined, architectural activities can be defined as a business which the original ideas, both directly related to art and emerging from the artistic aspect, are developed and turned into a real product and have a direct role in the functioning and development of the city. So, it can be said that by the nature of their profession architecture sector workers have a direct connection with space as they analyze, reorganize, and create it. The architectural sector has been chosen as the main subject of this research, assuming that they will evaluate the place features in detail in the firms’ location choices depending on their professional knowledge and experience.

In short, there are some economic, politic, social, and cultural factors in different scales that directly affect the office location choices of creative industries; moreover, some studies show that proximity to certain types of land use like transportation points, heritage sites, cultural facilities, recreation areas, universities, residential areas, sales markets for raw materials, and existence of similar industries increases attractiveness of place in the location choice of creative sectors. (Kang, 2010; Machado et al, 2013; He & Gebhardt, 2014; Liu & Silva, 2014; Liu et al, 2015), However, the impact of these indicators in the decision process can be changeable according to the internal dynamics of city such as size and population (Ronael, 2019). The effect of natural, social, cultural, economic and transportation, land-use related quality of place indicators on the location selection of architecture firm owners in Istanbul was analyzed in previous studies (Ronael, 2019; Ronael & Oruç, 2019; Ronael & Oruç, 2020). The main objective of this study is to analyze the spatial relation of the architecture sector with chosen land-use types namely; recreation activities, universities, public establishments, and transportation systems in Istanbul. On the other hand, explaining the effect of land use types on the location decision of architecture firm owners is not the purpose of this study. Although there is some definite information in the literature about the impact of land-use functions on the location decisions of creative industries, the spatial proximity of a creative

firm to a function does not necessarily mean the absolute effect of that function in the location decision process of the firm; however, the results can give clues about the preferences of firm owners, and they should be evaluated by including qualitative data in future studies.

In this direction, the addresses of registered architecture, urban planning, and landscape architecture firms in 2019 were obtained from the Istanbul Chamber of Commerce, and they digitalized in ArcGIS by using the geocoding method. After that, the network dataset of Istanbul is created, and all data was provided from OpenStreetMap Open Data Source. The dataset consists of the road system, transportation stations (bus, subway, Metrobus, train, tram, and ferry), recreation areas (parks, squares, forests, fair and entertainment areas), universities, and public establishments. After the production of the dataset, service areas of factors (0-10 and 10-20 minutes walking distance) is produced by using network analysis, and the location of architectural activities and service areas of factors are evaluated.

## **2. FACTORS AFFECTING THE LOCATION DECISION OF CREATIVE INDUSTRIES**

According to Richard Florida (2002), the workers of the creative industries feel free to take a risk and change their location, and their emotions and feelings are prominent compared to economic factors in the location decision process (Florida, 2002). Trip (2007) explained this situation as the transition of the system from “people follow jobs” to “jobs follow people”. Florida (2002) named this transformation as “people climate”; moreover, he emphasized the importance of life quality to manage people’s location decisions. He also specified the originality, identity, diversity in physical, functional, and social environment, tolerance, talent, technology, and multiculturalism as requirements for people climate.

In this perspective, physical structure and social characteristics of place are fundamental indicators to attract creative ones (Florida, 2005). In addition, Brown & Meczynski (2009) emphasized the importance of hard infrastructure that consists of economic conditions including diversity of job opportunities, cheaper transportation, and affordable city life, and soft infrastructure that is related to socio-cultural dimensions such as feeling and participating socio-cultural life to explain location decisions of creative industries. Parallel with this concept, Murphy & Redmond (2012) worked on hard and soft factors in terms of urban land-uses structure. While they determined public services, transportation infrastructure, and cost of living as hard factors, they defined cultural and leisure amenities, city environment, and tolerance and openness as soft factors.

Landry (2000) also described the specific requirements for the existence of creative industries and accepted the economic viability as a base, the social and cultural viability as fundamental infrastructures, and the environmental viability

as a necessity, and all of these factors directly affect the location decisions of creative industries. On the other hand, Montgomery (2003) investigated factors that increase the success of creative quarters; and he focused on place through the spatial perspective. Three main elements constitute the structure of his theory, and these are activity, form, and meaning. The activity includes functional dimensions, the form includes the physical characteristics of place and meaning consist of perceptual ideas of users (Montgomery, 2003).

Florida (2002) determined some specific amenities that increase the motivation and inspiration of workers in the creative industries, and these are sports facilities, recreation areas, restaurants, cafes and bars, urban heritage, cultural functions, and public spaces. These functions can be defined as "welfare amenities" which support the communication between creative workers and the local population, increase the attractiveness of region, give dynamism to the location, and allow for newcomers in the clustering process (Machado et al, 2013). Similarly, Landry & Bianchini (1994) revealed that the existence of these amenities contributes to the occurrence of community spirit and the creation of vibrant civil society. These recreational functions can be a part of urban identity, personal or communal memory, and symbol; therefore, it is a part of the cultural viability (Landry, 2000). In parallel with these ideas, Montgomery (2003) stated the importance of functional diversity in terms of the balance between daytime and evening uses, and he defined the recreational functions that are important meeting and gathering spaces as a necessity. In this scope, Hutton (2004) underlined the structure of inner city as the most proper location for the creative clusters; besides, some intensive urban facilities such as galleries, museums, exhibition spaces, heritage buildings, parks, squares, restaurants, cafés and shops were defined in the inner city to invite creative industries to the location (He & Gebhardt, 2014).

The ease of transportation and high accessibility in the urban internal road system of the location are the most important factors for the location decisions of creative industries (Liu et al, 2015). Landry & Bianchini (1994) emphasized that traffic congestion and low accessibility decrease the working motivation of creative workers. Therefore, it is clear that the creative class tends to choose most convenient locations for commuting (Liu et al, 2015). In this sense, the necessity for convenient public transportation system stands out, and enhancing the public transit system would be an effective strategy for higher development in the urban economy and the occurrence of compact creative clusters (Kang, 2010). In addition, Florida (2005) underlined the significance of diversity in land-use, especially in transportation systems, indicating the importance of ease of transportation and high accessibility inside, outside, and between clusters. On the other hand, Landry (2000) defined that there should be high and strong

mobility between various social and economic strata through using transportation alternatives. So, "hard" factors (public services and transportation infrastructure) work with "soft factors" (vibrant environment, diversity, and tolerance); moreover, "hard factors", especially transportation infrastructure such as public transportation, bicycle lanes, and connectivity with inner-city are considered by the creative ones in their office choices (Murphy & Redmond, 2012).

Although Florida (2002) claimed that economic factors are less important than social and cultural factors, economic viability is also a critical parameter in the location decision process of creative industries, and income and job opportunities are stand out in this process (Landry, 2000). Also, Montgomery (1990) underlined that the creative industries tend to choose locations where they increase their economic capacity. In this scope, the existence of public establishment becomes prominent because of the possible job opportunities and new negotiations, and public-private coalition becomes one mechanism behind the clustering process of creative sectors (Zheng, 2016). In addition, similar to these ideas, Musterd and Deurloo (2006) emphasized that easy access to public services based on the company location theory is a critical indicator for attracting talented people in cities.

Lastly, the existence of universities, which is defined as a source of talent and technology, has an important role in engaging attention of creative workers (Florida, 2005). Montgomery (2003) pointed out the significance of access to education providers in terms of increasing activity opportunities for the creative class. Besides, creative individuals tend to be close to universities and research institutions because of their vocational development (Liu et al, 2015); moreover, creative employers choose their office locations according to regions where the talented labor pool exists most (Roodhouse, 2010).

As a result, although every social group has some desires from the space, the members of the creative class have some definite expectations and requests that are stand out in the location decision process. Although there are some studies about the effect of land-use factors on the locational distribution of creative sectors in literature, most of the studies focus on the effects of sociocultural and spatial qualities that attracts creative class. In this study factors related to the urban land-use pattern were chosen to evaluate the spatial growth of creative sectors in Istanbul.

### **3. THE ARCHITECTURE SECTOR IN ISTANBUL**

According to annual reports (2009-2016) of the Social Security Institution, it can be said that Istanbul is the creative center of Turkey in terms of the number of creative workplaces and employees. Besides, this situation has supported by the

relevant policies of Istanbul Environmental Plan (2009), Tenth Development Plan (2013), Istanbul Regional Plan (2014), and by the acceptance of Istanbul to UNESCO's Creative City Network program in the design category in 2017. The Istanbul Environmental Plan that was completed in 2009 includes the first remarkable strategies for the creative sectors in Istanbul. According to the plan report, creative industries were defined as a priority, and considered to be sustainable and environmentally-friendly sectors that can provide economic progress and facilitate participation in global economic competition. Also, a cultural triangle was defined within the boundaries of Eminönü, Beyoğlu, Şişli, Beşiktaş and Kadıköy districts, and spatial strategies have been developed to improve creative sectors within and outside the triangle.

In order to understand the existing situation and development direction of the creative sectors in Istanbul the spatial distribution of creative workplaces and employees for the years 2009 and 2018 were evaluated. According to the data obtained from Social Security Institution, the creative industries are mostly concentrated in Şişli (17%), Zeytinburnu (9%), Beşiktaş (8%), Kadıköy (8%) and Beyoğlu (7%) districts in 2009 as indicated in the Istanbul Environmental Plan. However, when the spatial development of the creative economy between 2009 and 2018 is examined; even though the central districts (Şişli, Zeytinburnu, Fatih, Beyoğlu, Beşiktaş, and Kadıköy) sustain their numerical priority, there is a negative change in their ratio within the total (Table 1). On the other hand, it can be said that the creative economy tends to expand from center to peripheries (Esenler, Esenyurt, Başakşehir, and Beylikdüzü districts on the European side; Ataşehir, Ümraniye, Maltepe, Kartal, and Pendik districts on the Anatolian side), and new corridors for creative industries has started to be formed in the districts defined on both sides.

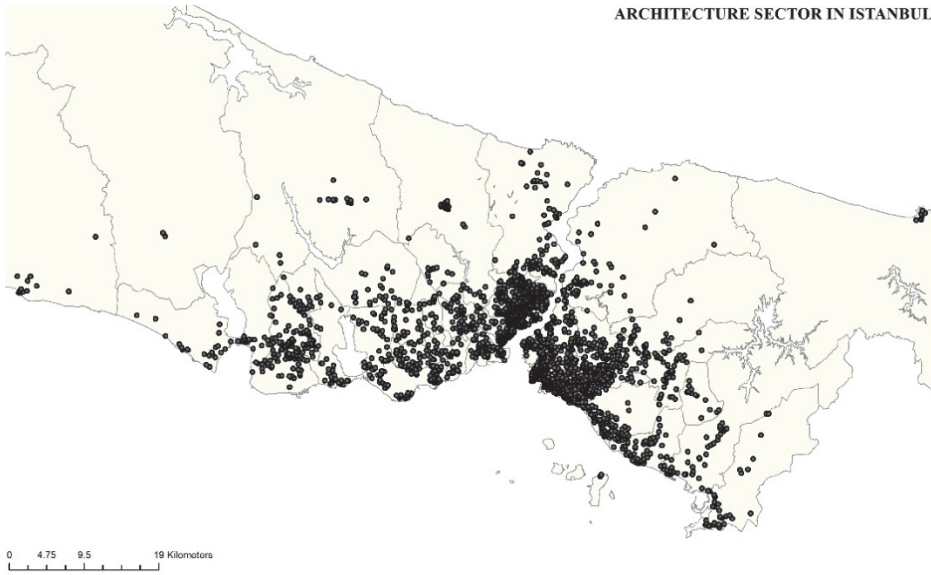
**Table 1: Evaluation of the districts of Istanbul between 2009-2018, according to the number of workplaces in the creative sectors (Data was obtained from the Social Security Institution).**

District	2009		2018		Variation
	Number of Work Places	Ratio(%)	Number of Work Places	Ratio(%)	
<b>Ataşehir</b>	<b>238</b>	<b>2.11</b>	<b>984</b>	<b>4.94</b>	<b>2.83</b>
<b>Esenler</b>	<b>114</b>	<b>1.01</b>	<b>555</b>	<b>2.79</b>	<b>1.78</b>
<b>Esenyurt</b>	<b>69</b>	<b>0.61</b>	<b>421</b>	<b>2.11</b>	<b>1.5</b>
<b>Başakşehir</b>	<b>194</b>	<b>1.72</b>	<b>554</b>	<b>2.78</b>	<b>1.06</b>
<b>Maltepe</b>	<b>200</b>	<b>1.77</b>	<b>532</b>	<b>2.67</b>	<b>0.9</b>

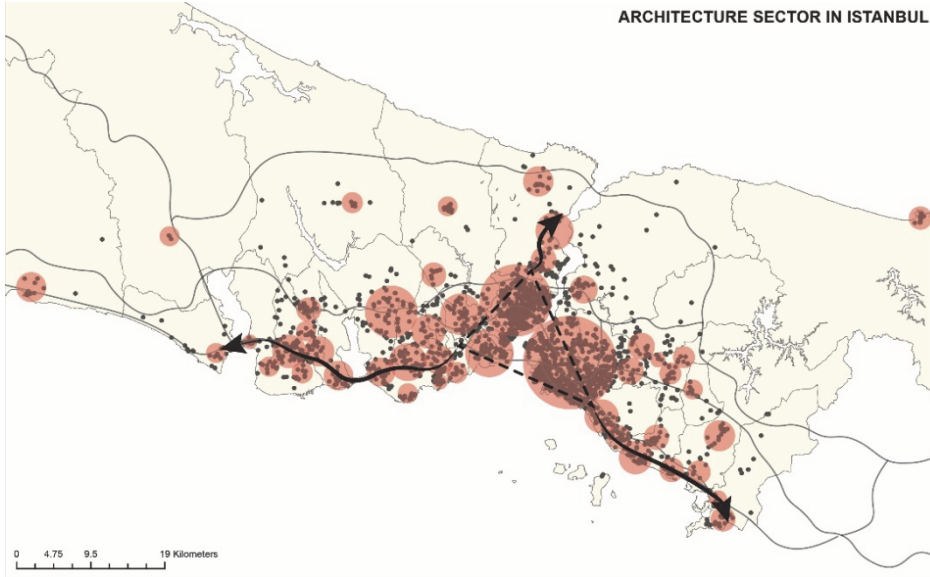
<b>Beylikdüzü</b>	<b>58</b>	<b>0.51</b>	<b>251</b>	<b>1.26</b>	<b>0.75</b>
<b>Ümraniye</b>	<b>326</b>	<b>2.89</b>	<b>713</b>	<b>3.58</b>	<b>0.69</b>
<b>Çekmeköy</b>	<b>23</b>	<b>0.2</b>	<b>171</b>	<b>0.86</b>	<b>0.66</b>
<b>Pendik</b>	<b>181</b>	<b>1.6</b>	<b>445</b>	<b>2.23</b>	<b>0.63</b>
<b>Kartal</b>	<b>161</b>	<b>1.43</b>	<b>405</b>	<b>2.03</b>	<b>0.6</b>
Avcılar	101	0.89	271	1.36	0.47
Bahçelievler	264	2.34	521	2.61	0.27
Sancaktepe	53	0.47	147	0.74	0.27
Tuzla	79	0.7	191	0.96	0.26
Sarıyer	228	2.02	454	2.28	0.26
Üsküdar	389	3.45	731	3.67	0.22
Arnavutköy	13	0.12	62	0.31	0.19
Küçükçekmece	184	1.63	355	1.78	0.15
Sultangazi	28	0.25	79	0.4	0.15
Eyüp	121	1.07	227	1.14	0.07
Silivri	24	0.21	54	0.27	0.06
Beykoz	152	1.35	280	1.41	0.06
Sultanbeyli	39	0.35	78	0.39	0.04
Şile	5	0.04	12	0.06	0.02
Adalar	5	0.04	6	0.03	-0.01
Çatalca	22	0.19	29	0.15	-0.04
Gaziosmanpaşa	97	0.86	161	0.81	-0.05
Bakırköy	226	2	356	1.79	-0.21
Kadıköy	919	8.14	1580	7.93	-0.21
Büyükçekmece	123	1.09	166	0.83	-0.26
Bayrampaşa	160	1.42	224	1.12	-0.3
Kağıthane	534	4.73	882	4.43	-0.3
Bağcılar	391	3.46	568	2.85	-0.61
Güngören	193	1.71	201	1.01	-0.7
<b>Beşiktaş</b>	<b>947</b>	<b>8.39</b>	<b>1418</b>	<b>7.12</b>	<b>-1.27</b>
<b>Beyoğlu</b>	<b>826</b>	<b>7.32</b>	<b>1025</b>	<b>5.14</b>	<b>-2.18</b>
<b>Fatih</b>	<b>655</b>	<b>5.8</b>	<b>685</b>	<b>3.44</b>	<b>-2.36</b>
<b>Zeytinburnu</b>	<b>1057</b>	<b>9.36</b>	<b>1334</b>	<b>6.69</b>	<b>-2.67</b>
<b>Şişli</b>	<b>1892</b>	<b>16.76</b>	<b>2800</b>	<b>14.05</b>	<b>-2.71</b>
Total	11291	100	19928	100	



To show the current situation of architecture sector in Istanbul, lists of registered architecture, urban planning, and landscape architecture firms in 2019 were obtained from Istanbul Chamber of Commerce. According to data, there are 3442 architecture firms, 137 urban planning firms, and 140 landscape architecture firms in Istanbul. So, 3719 firm's addresses were digitalized through geocoding method in ArcGIS, and point type data were produced to show the distribution of the architecture sector in Istanbul. According to Figure 1, firms commonly concentrates in Beyoğlu, Beşiktaş, Şişli, Fatih, Kadıköy, and Üsküdar districts, similar to the general distribution of the creative economy. Besides, the current spatial distribution of sector shows the sprawl to Atasehir, Umraniye, Maltepe, Kartal, and Pendik districts in the Asian side, and to Zeytinburnu, Güngören, Bakırköy, Bahçelievler, Küçükçekmece, Avcılar, Beylikdüzü, and Esenyurt districts in the European side. This sectoral sprawl is more apparent especially on the coastline and around the main transportation links (Figure 2). and some sub-centers have started to form especially in the peripheries.



**Figure 1: Spatial distribution of architecture, city planning and landscape architecture firms in Istanbul.**



**Figure 2: Spatial sprawl of the architecture sector (Ronael & Oruç, 2020).**

As a result, there are six central districts in Istanbul where architectural activities are concentrated, and these are respectively Kadıköy, Beşiktaş, Üsküdar, Şişli, Beyoğlu, and Fatih. Also, according to the current situation, it is seen that there is a tendency to spread from center to peripheries on the European and Anatolian sides, especially parallel to the coastline and main transport connections. Under the pressure of this trend, sub-centers started to emerge in districts such as Zeyirburnu, Bakırköy, Beylikdüzü, Esenyurt, Ümraniye, Ataşehir, Maltepe, Kartal, and Pendik.

#### **4. ANALYZING LANDUSE TYPES AFFECTING THE SPATIAL DISTRIBUTION**

##### **4.1. Methodology**

As it was mentioned before, various land-use types like transportation infrastructures, heritage sites, cultural facilities, recreation areas, universities, sales markets for raw materials, and similar industries affect the location decisions of creative industries; and in this study the spatial relation of architecture sector with four of these functions will be evaluated These are;

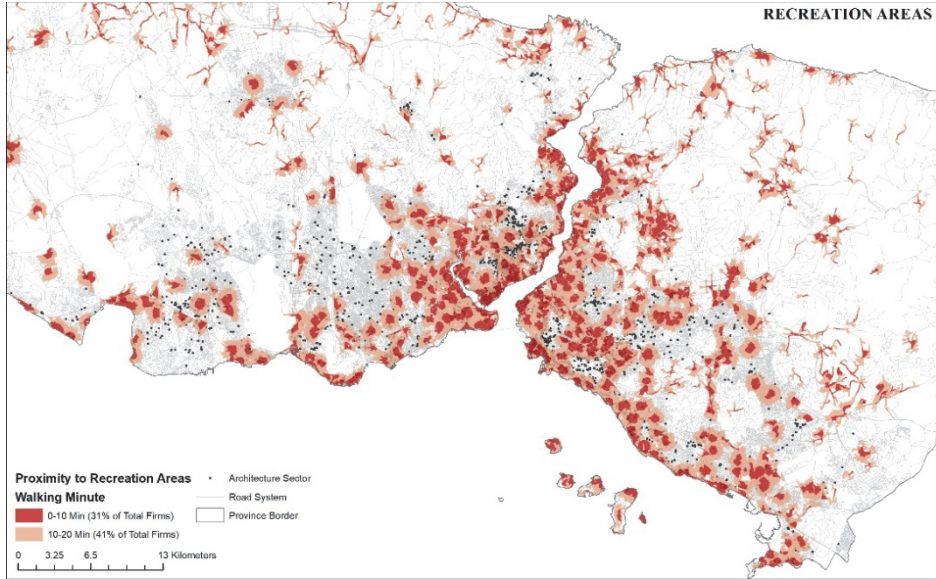
- Recreation areas as a part of cultural facilities, as a motivation source for creative workers, as an important meeting and gathering place,
- Public establishments as a potential of job source, as a critical mechanism behind the clustering process,

- Transportation infrastructures as a main driver to sustain mobility and accessibility, as a significant issue for Istanbul,
- Universities as a source of talent and technology.

After the selection of evaluation factors, the network dataset was produced by using road data of Istanbul. In this step, walking was chosen as the travel mode, and the average walking speed was accepted as 5 km/h. After the creation of the network dataset, service areas for each function were analyzed as three categories. The first one is a maximum of ten minutes walking distance which refers to 850 meters from the function, and as the number/percentage of firms included in the maximum of 10 minutes' service area of the selected function increases, a significant spatial relationship between the firm and the analyzed function is accepted. The second one is between ten and twenty minutes walking distance which refers to 850-1700 meters from the function, and indicates a neutral spatial relationship between the analyzed land-use function and firms. Lastly, firms located more than 20 minutes' walking distance from the analyzed function accepted as spatially irrelevant.

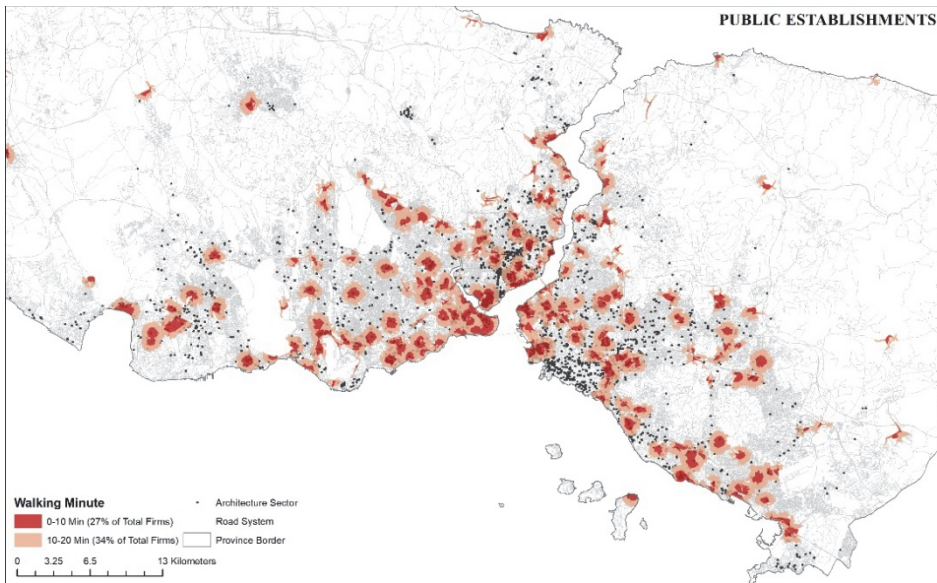
#### **4.2. Analysis and Evaluations**

The existence of recreation areas provides more activity opportunities for the creative class and attracts them to the location (Florida, 2003), serves as important meeting and gathering places, contributes to the meaning of place (Montgomery, 2003). Also, the existence of recreation areas around workplaces is an important factor to increase creativity, inspiration, and working motivation. When the relationship between the location of recreation areas and architectural firms in Istanbul are analyzed (Fig.3), the results pointed out a different tendency. While 31% of all companies are located within a 10 minutes' walk from the recreation areas, 30% of them, which are more than 20 minutes away from the recreation areas, are not included in services areas of recreation functions. On the other hand, the majority (41%) of total firms is located between 10 and 20 minutes away from recreation functions; therefore, it can be said that the existence of recreational areas does not have a significant role in the sprawl of the architecture sector, and there is a neutral spatial relationship between recreation areas and architecture firms. This situation also can be related to the lack of recreation areas across Istanbul. Also, the service area of recreation function covers more firms in the center and coastal line, unlike in the periphery, where the ratio of companies having a meaningful spatial relationship with recreation areas decreases from 30% to 21%.



**Figure 3: Service areas of recreation areas.**

As it was mentioned before, creative industries tend to benefit from clustering opportunities and they aim to extend their economic capacity (Montgomery, 1990). In this sense, being close to the public establishments is important for the architecture sector because their outputs have to be approved by authorities. In addition, public establishments, especially municipalities, can be accepted as a job source, and the firms near the public establishments increase their opportunities for new negotiations. So, the opportunity for public-private partnership is a critical indicator to attract attention of creative individuals (Zheng, 2016), and they want to be close to the public institutions to access services easily (Musterd & Deurloo, 2006). However, when the results are evaluated (Figure 4), while 27% of all companies are located at a maximum of 10 minutes away from the public establishments, 34% of them are located 10-20 minutes walking distance from them. On the other hand, 39% of total companies is not included in services areas of public establishments. Therefore, similar to results of recreation areas, it can be said that being close to public institutions is not an effective factor in the distribution of sector in general. Although the majority of public establishments concentrates in the center of Istanbul, every district has its own municipal building inside its administrative borders and the emergence of clusters around municipal complexes is observed especially in the peripheries. However, when this result is evaluated with the number of firms and public institutions in the peripheries, there is a neutral spatial relationship between architecture firms and public establishments.

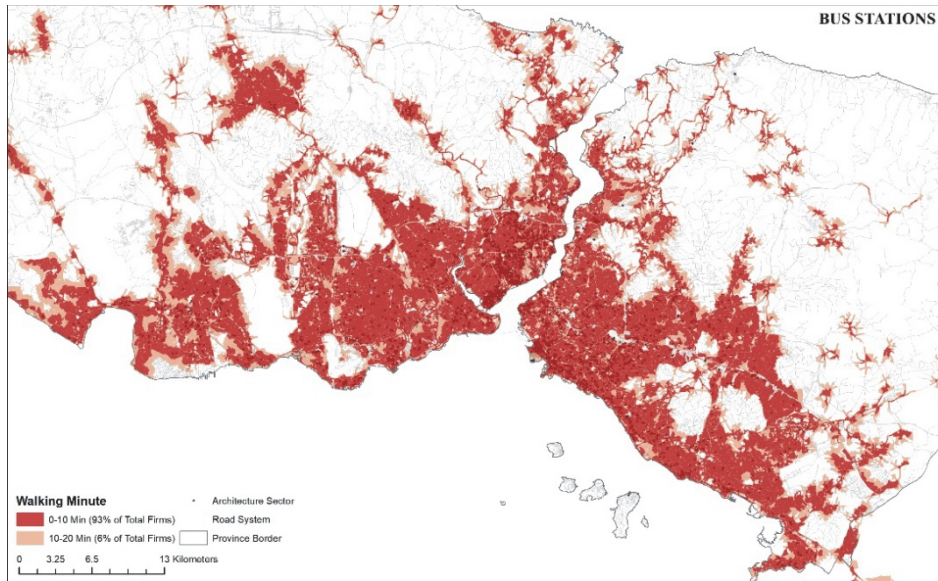


**Figure 4: Service areas of public establishments.**

It can be said that the high mobility and ease of transportation are the most critical factor in the location distribution of all creative sectors (Montgomery, 1990). It also directly affects access opportunities based on other economic and social factors (Landry, 2000), and it increases the working motivation and productivity of the creative class (Landry & Bianchini, 1994). The creative workers desire to reach urban internal transportation alternatives easily because they want to decrease the travelling time between their home and work (Liu et al, 2015), so they consider the existence of strong public transportation system, bicycle lanes, and connectivity with inner-city in the location decision process (Murphy & Redmond, 2012). Therefore, although it was claimed that the importance of transportation and accessibility decreases under the circumstances of the new economy (Sharp, Pollock, & Paddison, 2005), it is still a significant determinant in the spatial growth of architecture sector, especially in cities like Istanbul having traffic problems. The results are also parallel with the knowledge given in the literature. According to Figure 5, 93% of companies are located at a maximum of 10 minutes away from the bus stations., and While the service area of this function has the highest number of firms compared to the other functions, only 1% of firms is not included in impact area. When firms located in the peripheries are evaluated, 91% of companies are located at 0-10 minutes walking distance from the bus stations. The powerful impact of this factor can be relatable with the current accessibility problem of Istanbul; and even though the other public transportation alternatives continue to develop their network in Istanbul, bus is



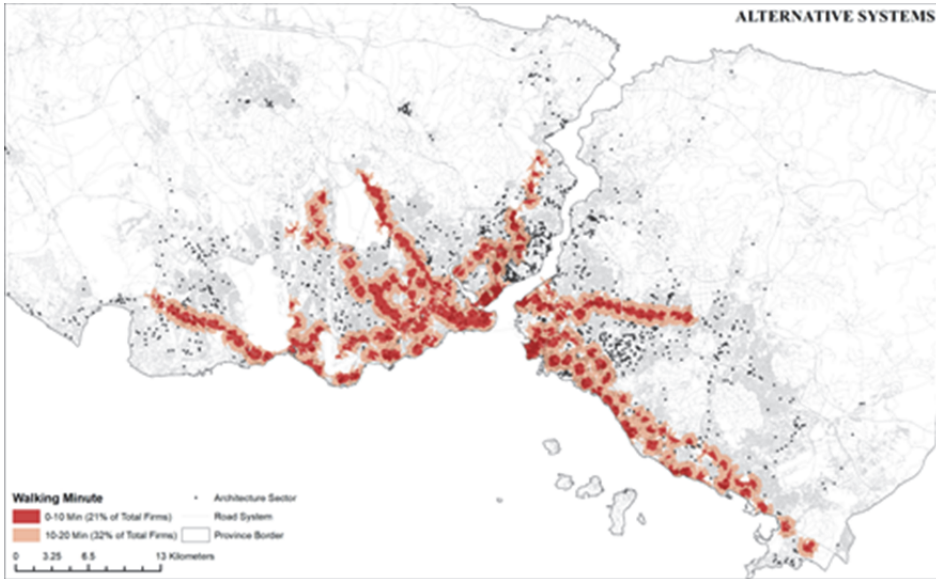
still the most common form of public transportation, and this is also another reason for firm owners to arrange their locations according to bus routes.



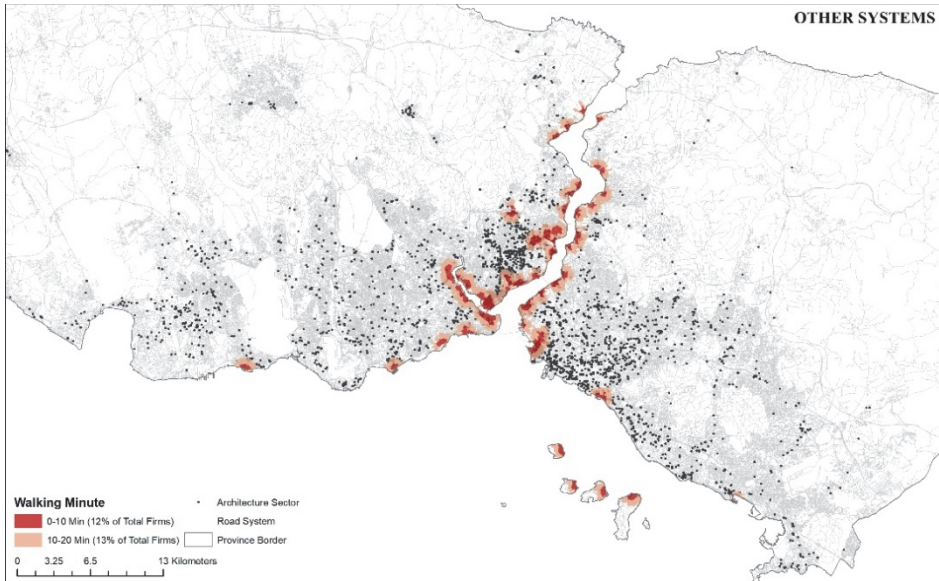
**Figure 5: Service areas of bus stations.**

On the other hand, when alternative public transportation systems (Metrobus, subway, and tramline system) are examined (Figure 6), 30% of total firms are 10 minutes away from the stations of these transportation systems; however, 32% of companies are located 10-20 minutes away from the stations. 37% of total companies is not included in service areas of alternative transportation routes. When the peripheral districts are analyzed, the ratio of firms in 10 minutes walking distance from the station decreases from 30% to 20%. These results are less than expected, especially in the peripheral districts that are located on routes of these transportation systems, and this situation can be explained with the ongoing development process of alternative transportation systems. Also, some of these systems that provide the connection with the peripheries such as Avclar-Beylikdüzü Metrobus line, Kadıköy-Pendik Metro line, and Halkalı-Tuzla Train line was opened not long ago, so their effects on the spatial distribution of firms will be observed in the future. In addition, other specially located transportation modes that are ferry, tunnel, and ropeway were examined separately. According to Figure 7, 16% of companies are located at maximum 10 minutes away from the stations, and 19% of companies are located 10-20 minutes away from these transportation systems. In addition, while 3% of companies out of the center has a meaningful spatial connection with the stations, 74% of total companies is not

included in services areas of them. These results can be accepted normal because these transportation systems provide service for specific areas of the city, especially in the coastal regions and the center.

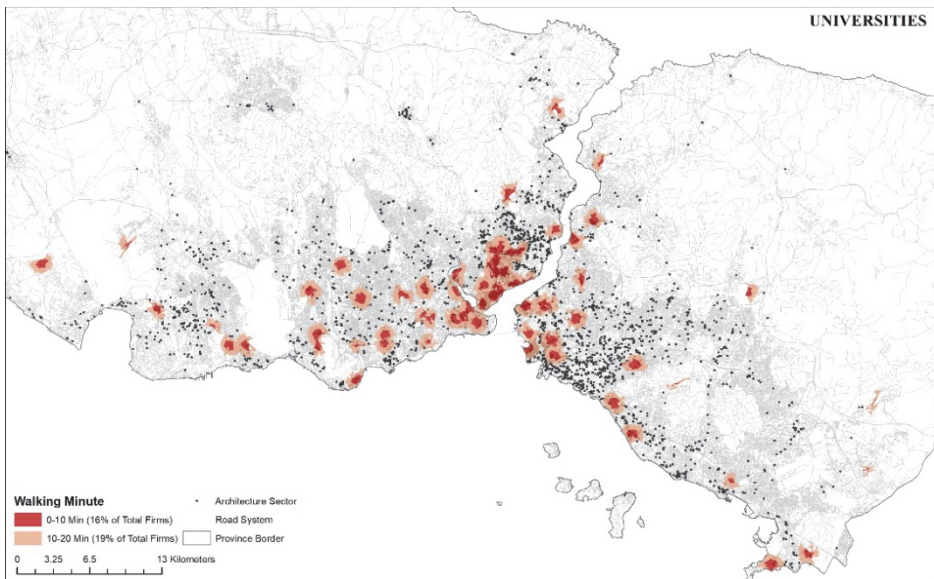


**Figure 6: Service areas of alternative public transportation systems.**



**Figure 7: Service areas of other transportation systems.**

In the rise of the creative economy, knowledge and creativity have gained importance more (Sharp, Pollock, & Paddison, 2005), and talent and technology became the most important factors for attracting creative ones (Florida, 2002). In this scope, universities that are education providers can be accepted as a source of talent and technology. The existence of universities provides social diversity, and it also leads to the occurrence of functional diversity. Also, the creative individuals tend to be close to universities and research institutions because of their vocational development (Liu et al, 2015); moreover, creative employers choose their office locations according to regions where the talented labor pool exists most (Roodhouse, 2010). However, findings are different from the literature. According to Figure 8, while 16% of all companies are located in 10 minutes distance the universities and majority of these firms are located in the central districts, 18% of them are located 10-20 minutes away from them. On the other hand, 65% of the total does not get involved in the service areas of universities, and this finding can be observed easily in the peripheries. Only 5% of the companies out of the central districts are located at a maximum of 10 minutes away from the function. Therefore, it can be said that despite the high number of universities (57 university) in Istanbul compared to other cities, there is not a meaningful spatial relation between this function and architecture firms.



**Figure 8: Service areas of universities.**



## 5. CONCLUSION

In conclusion, the creative industries generally concentrated at the CBD and central districts namely Şişli, Beşiktaş, Beyoğlu, Fatih, Kadıköy, and Üsküdar in Istanbul. However, in parallel with sectoral growth and changing urban structure, creative industries are spreading out of the CBD and the city center. The sub-centers started to occur in Zeytinburnu, Güngören, Bakırköy, Bahçelievler, Küçükçekmece, Avcılar, Beylikdüzü, and Esenyurt in the European side; Atasehir, Umraniye, Maltepe, Kartal, and Pendik in the Anatolian Side. There are several hard and soft factors defined in the literature to explain this spatial distribution (Brown & Meczynski, 2009; Murphy & Redmond, 2012), and one of them is urban land-use structure. It is clear that urban land-use indicators affect the location decisions of architecture firms and play a great role in the spatial growth of the architecture sector in Istanbul. However, their effectiveness is changeable according to the type of land-use factor and internal dynamics of Istanbul.

Table 2 shows a comparison between the effects of determined land-use factors. According to the comparison, transportation systems have the highest effect on the spatial distribution of the architecture sector in Istanbul. The effects of recreation areas, public institutions, and universities follow this situation respectively. Although Florida (2005) asserted that the feelings of the creative class carry more weight than physical circumstances such as transportation system and costs, land values and production cost in the location decision process, and also he emphasized the impact of creative class's movement on the spatial growth of creative sectors (Florida, 2003), the results show a different tendency. In this situation, it is clear that the land-use types related to transportation have a remarkable effect on the spatial growth of sector in both the center and peripheries of Istanbul, especially bus routes, and findings prove that the significance of accessibility is still high in the new economic system contrary to claims about decreasing importance of geography (Kelly, 1998). This situation can be explained by the dynamics of Istanbul, such as traffic and mobility problems, high car ownership in the city, and sprawl direction of the city.

On the other hand, the low effect of other land-use types on the spatial growth of architecture sector may be associated with an unbalanced distribution and lack of functions. Besides, it is hard to measure the impacts of these factors in the central districts of Istanbul because of numerous dynamics and factors that might be effective in the location distribution process in central districts, like socio-cultural dimension that is related to tolerance, diversity, vibrant life style, urban atmosphere, and activity opportunities (Ronael & Oruc, 2019). On the other hand, when the firm distribution in the peripheral districts is examined,

except for the transportation, recreation functions, public institutions, and universities does not have strong impact on the spatial growth and sprawl trend of the architecture sector. The most unexpected result derived from analyzes is about the effect of university function. Universities were defined as a source of talent, technology, skilled labor pool (Florida, 2003) and the creative individuals tend to choose locations close to universities because of their vocational development and sustaining connection with skilled labors (Liu et al, 2015; Roodhouse, 2010); however, there is not a significant relation between the location of universities and architecture sector distribution in Istanbul as expected.

**Table 2: Relationship between land-use types and number of firms.**

LAND-USE TYPES	NUMBER OF FIRMS						Firms out of the Central Districts	
	Very Strong		Rather		Not at All			
	0-10 Min	%	10-20 Min	%	20- Min	%	0-10 Min	%
<b>Proximity to Recreation Areas</b>	1149	30.9	1518	40.82	1052	28.29	431	20.97
<b>Proximity to Public Establishments</b>	1015	27.29	1262	33.93	1442	38.77	498	24.23
<b>Proximity to Transportation Stations</b>								
<i>Bus Stations</i>	3476	93.47	218	5.86	25	0.67	1880	91.48
<i>Public Transportation Systems</i>	1140	30.65	1197	32.19	1382	37.16	421	20.49
<i>Others (Ferry, Telfer)</i>	446	11.99	499	13.42	2774	74.59	60	2.92
<b>Proximity to Universities</b>	609	16.38	705	18.96	2405	64.67	97	4.72

As a result, transportation is the most significant land-use type that impacts the spatial distribution of the architecture sector in Istanbul, and this result is derived from the traffic and accessibility problems based on the unplanned sprawl of Istanbul, so it is changeable according to the case city. However, by including further analysis of land-uses related to the socio-cultural environment and qualitative data like opinions of firm owners about the considered land-use types in future studies, more comprehensive results can be obtained.

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