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# Mimari ve Kültürel Mirasın Sürdürülmesi İçin Tarihi Bir Koridorun Canlandırılması; Alsancak İzmir'den Coğrafi Bilgi Sistemleri (CBS) Temelli Bir Örnek

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**ÖZ**:

Tarih, kültür ve ekoloji kentlerin kendilerine özgü kimliklerini oluşturan önemli değerlerdir. Bu değerler kentlilerin kente olan bağlılık ve aidiyet hislerini artıran, gelecek nesillere ulaştırılması gereken değerler olup; korunmaları oldukça önemlidir. Bu araştırmanın amacı Coğrafi Bilgi Sistemlerini (CBS) kullanarak; Tarihi Alsancak İstasyonundan Kordon sahil şeridine kadar uzanan 1469. sokağın mimari miras niteliğindeki yapılarının tarihi özelliklerini ne ölçüde koruduklarını tespit ederek, belirtilen rotadaki tarihi miras koridorunu yeniden canlandırmak, günümüze ulaşan değerlerini korumak için alternatif yeniden kullanım önerileri geliştirmektir. Araştırma alanı İzmir Alsancak'ta bulunmaktadır. Veriler; araştırma alanındaki her bina için Newman modeline göre toplanarak her binayı taşıdıkları tarihsel değerlere göre puanlama esasına dayalı olarak değerlendirilmiştir. Newman modeli değişkenleri; yapının varoluş süresi, arazi kullanım değişikliği, mimari değişiklik ve yapı durumu olarak belirlenmiş; her bir yapının toplam puanı, kendi tarihsel değerlerini koruma derecesini göstermiştir. Daha sonra, veriler CBS ortamına aktarılarak 1469. sokak için "Hot Spot", "Inverse Distance Weighted Interpolation" ve "Weighted Sum " analizleri uygulanmış, sokak içerisinde tarihi miras potansiyeli yoğunluğu değerlendirilmiştir. Elde edilen sonuçlara göre;

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sokakta yer alan yapıların %25'i tarihi değerini korurken; %42'sinin tarihi değer kaybına uğradığı tespit edilmiştir. Araştırmanın son aşamasında sokağın yeniden canlandırılması ve tarihi Alsancak İstasyonu'ndan Kordon sahil şeridine kadar tarihi kültürel koridor oluşturmaya yönelik stratejiler geliştirilmiştir.

**ANAHTAR KELİMELER:** Tarihi koridor, Kültürel miras, Mimari miras, Coğrafi Bilgi Sistemi, İzmir.

**ABSTRACT**:

History, culture and ecology are important values which constitutes unique identity of the cities. In this context, it is crucial to sustain, protect and respect heritage values for the future generations. These values also create personal attachment to the place for the urbanites. The aim of this research is to collecting data of architectural heritage through the 1469th Street to conserve and revitalize the historical corridor from the Historical Alsancak Station to the waterfront promenade Kordon using Geographic Information System. The research area is located in Alsancak district, İzmir Turkey. Data collection was conducted from the research field scoring for each building based on Newman's Model for conservation degree of historical values of each building. The variables of the model evaluating structures were; time frame of construction, land use change, architectural modification, and building condition. When categorizing structures the total score of each one offered the degree of historical value protection. To assess the density of historical potential of the 1469. Street Hot Spot Analysis, Inverse Distance Weighted Interpolation, and Weighted Sum Analysis were implemented. 25 percent of the Street has been protected historical value, while almost 42 percent of the area was evaluated as a loss of history. In the final, suggestions were placed to offer new usage strategies for the future adaptive reuse possibilities and renovation interventions to revitalize the street and create a historic cultural corridor from Alsancak Station to Kordon.

**KEYWORDS:** Historical Corridor, Cultural heritage, Architectural heritage, Geographic Information System, İzmir.

## 1. INTRODUCTION:

Cities carry various historical and cultural heritage values since their existence until today (Gülgün et. al., 2014; Çetin et al., 2018; Kalaycı Önaç and Birişci, 2019). Especially in the historical centers where the cities were first established, there are many structures and cultural values in the form of historical heritage. Especially in the historical centers where the cities were first established, there are many structures and cultural values in the characteristic of historical heritage. However, over time, the changes made to meet the spatial requirements of modern life cause some historical heritage values to be damaged or destroyed. In order to restore the values lost by the historical city centers, revitalizing projects have been carried out in Europe and in our country, especially in the damaged historical center areas of metropolitan cities in the last two decades. Within the scope of the revitalization projects, many applications such as urban transformation projects in historical textures, restoration and reorganization of public spaces, squares, improvement of street landscapes, sanitation and pedestrianization practices on the facades of historical buildings are implemented (Zeybek Çetin, 2012 ).

A heritage corridor is a practical way to protect considerable amount of cultural landscapes which form linear cultural clusters. Mostly a cultural corridor can be said to have developed tourism industry and economy. Besides, a heritage corridor deals with the reuse of historical buildings and environmental improvement (Wang, 2001). The idea of heritage corridor gives point to natural and cultural heritage. Therefore, protecting heritage, improving region, contributing residential activities and cultural tourism are some of the objectives of heritage corridor (Li and Yu, 2004).

There are numerous researches conducted on conservation or sustaining methods of landscapes that have historical heritage qualifications. Bianco (2018) designed an interactive multilayer map for cultural heritage of Tuscia, Italy. The aim of the research was to create a double level inventory according to Midas standards. Creating this database targeted informal users and institutions authorized in protection, management and promotion of the cultural and architectural heritage.

Chen et. al. (2014) suggested a cultural heritage corridor along Qionglai section of the Southern Silk Road in their study in which they aimed to define the characteristics of the heritage grade and heritage route and also to lead the planning and design of detailed conservation by geodesign theory through Geographic Information System (GIS).

They classified and graded the heritage resources and built a heritage recreation route pattern which resulted in creation of the spatial pattern of the heritage corridor.

Yenil and Akyazı (2019) proposed a method aimed at creating "cultural trail corridor" in order to develop sustainable tourism. In this article, it have been mentioned that sustainable tourism is the tourism approach that meets the needs of the host region and develops the region for the future. Kayseri, Konya and Aksaray provinces were chosen by the researchers as the sampling areas which are at the Anatolian section of the Silk Road. Structures have been visualized on the map and buffer analysis have been performed for suitability of food service, accommodation and recreation in GIS environment. Then, each point was used functionally in terms of sustainable tourism planning suggestions.

In the study by Newman and Kim (2014), demolition by neglect (DBN) has been defined as the devastation of historic centers or sites due to the loss of functionality and maintenance of the building. This study is explained that the cultural heritage and history of cities should be prevented due to neglect and should be tried to be saved by using historical conservation policies. Therefore, three historic boroughs of America in the state of Pennsylvania have been analyzed and scored by Newman's model and they determined that each historical boroughs is consist of neglected structures on an average of 25 percent and multiple adaptive reuse, regeneration or renovation actions have been proposed to prevent heritage resources. Adaptive reuse has an important role to play in economic, social, cultural, historical and ecological sustainability of an historical region. Sustainability can be achieved by meeting environmental, social and economic needs which are interrelated to each other. This situation can be interpreted as strengthening the relationship between the historical site and the society with social aspects and strengthening the values of local features of that historical landscape with environmental and economic factors (Wiliama, 2007).

İzmir is a province located in the middle of Aegean coast and west of the Anatolian Peninsula. The city of Izmir has a rich historical past and continues to exist as a big city with a history of 5000 years that has been home to many different civilizations throughout history and today carries the traces of these civilizations. Izmir is a cosmopolitan city where Muslims, Greeks, Armenians, Jews and Europeans have lived together for centuries and as a result of this, there are various historical buildings shaped by the social structure and culture of the society (Uçar, 2014). However throughout time the historical landscape in the center of the city has changed to meet the requirements of modern city life, which caused some of the historical heritage to lose functionality as some of the historical buildings, are inadequate to adapt to meet the modern urbanites' needs and desires. Therefore, a case street from İzmir Alsancak where numerous historical structures still exist was chosen to indicate the suggested method to calculate the loss of historical value and to produce suggestions on including those structures back to life with re-usage strategies while protecting historical character of the street landscape.

## 2. MATERIALS AND METHOD

### 2.1. Material

The main material of this research is the 1469$^{th}$ Street in Alsancak region in İzmir province / Turkey, within the boundaries of the metropolitan district of Konak, the historic center of the city. Alsancak, formerly known as Punto, is an important part of Izmir where historical buildings are intensely located. Alsancak was developed as the first settlement with its steep intersecting streets in the second half of the 19th century (Özsoy, 2009). Especially after the second half of the 20th century, the population of İzmir increased rapidly and the city began to grow at an uncontrolled pace. As a result of this growth, Alsancak region and its environment have begun to build and transform rapidly. Due to the determination of the immovable cultural assets required to be protected in the region for the first time at the end of 1970s, many qualified historical buildings were demolished before this period and turned into multi-storey buildings. The remaining historical buildings, on the other hand, were unable to continue their life as housing because of the fact that the area left from the housing function in general and became a region serving the trade and entertainment sector and had to change functions.

1469$^{th}$ Street (Figure 2.1) is a street that connected to Alsancak Quarter and Konak District. 1469$^{th}$ street is also known as Bornova Street. This unique street is located between the Kordon recreational shoreline and Alsancak train station. The Street also intersects with Kıbrıs Şehitleri Street which is the most intense pedestrian street in the area active with shops and entertainment places, cafes, and restaurants. Nowadays, this street is one of the most frequented places of the city, which generally houses cafes, bars and restaurants (Figure 2.2).

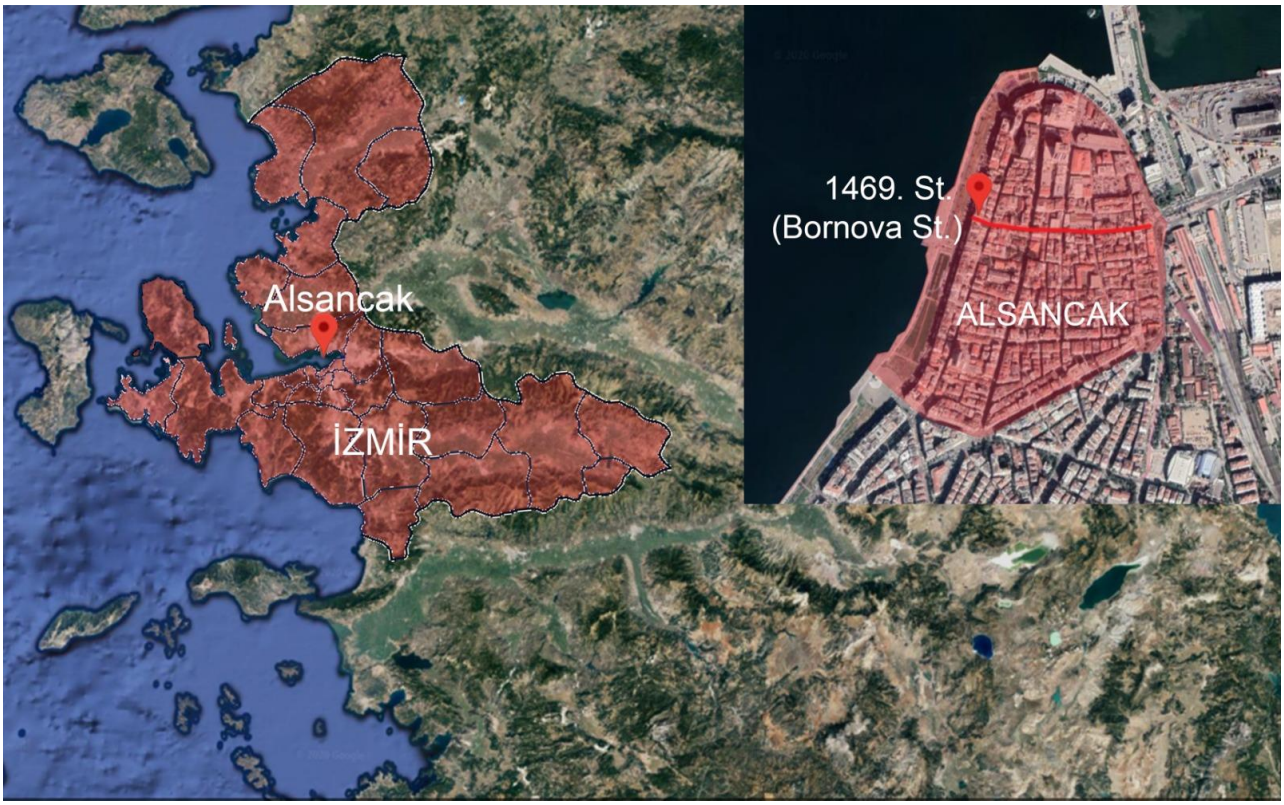


**Figure 2.1** Boundary of 1469th Street

**Figure 2.2** A view from 1469th Street (Google maps, 2020).

## 2.2. Method

### 2.2.1. Data Collection

After a comprehensive literature review, data about the buildings and prior main use of the 1469th street were evaluated based on the Newman's Model (Newman, 2013). The model helped to evaluate the buildings' historical value preserved in the current state. In Newman's Model (2013) there are five variables were used to evaluate the degree of neglect in historic buildings: Time frame of construction, land use change, architectural modification, building condition, and assessed value. In this study the assessed value variable was removed, since the reliable data on the financial values of the buildings could not be reached in Turkish market condition. The variables were scored by the measures as used in the Table 2.1.

**Table 2.1.** Variables and measure scores

| VARIABLES &MEASURES | Weight Value | Time Frame of Construction | |
|---|---|---|---|
| | 1 | Non- historic | |
| | 2 | Potential for preservation | |
| | 3 | Preservation worthy | |
| | | **Land Use Change** | |
| | 1 | Vacant | |
| | 2 | Alternate Land Use | |
| | 3 | Continuous Land Use | |
| | | **Architectural Modification** | |
| | 1 | Intrusion or Modern | |
| | 2 | Modified | |
| | 3 | Historically significant | |
| | | **Building condition** | |
| | 1 | Dilapitated | |
| | 2 | Moderately decayed | |
| | 3 | Well-conditioned | |
| **TOTAL WEIGHT VALUE** | | | |

To preserve and monitor historic districts for integrity and structural viability Newman (2013) developed explanatory variables. Each variable is divided into three measures to survey structures in a historic district.

*Time Frame of Construction:* This variable is important to determine the integrity. High amount of historic structures with poor maintenance and increased number of non-historic structures is an indicator of losing historic value in a district. According to the National Register Criteria for Evaluation (National Park Service 2013; Newman, 2013) buildings over fifty years old, having architectural characteristics of a specific time period, important historical associations, or having information about history could be considered as significant. These significant buildings are considered as "preservation worthy" structures. The three measures of this variable are:

- Non-historic: the structures that are not appropriate for preservation
- Potential for Preservation: the structure may eligible to preserve in the future only because of the age factor.
- Preservation Worthy: the structures under conservation or deserve preservation because of the construction year.

*Land Use Change*: This variable is important to asses' viability and historic integrity of a heritage building. According to Ravenscroft (2000) identifying current land use and contextual change is important to figure out viability and vitality of districts. While a stable land use is an indicator of historic integrity and high viability, adaptive reuse strategies are the indicator of increase in vitality even though some degree of integrity is sacrified because of the required renovations to adapt a new function (Newman 2013). The three measures of this variable are:

- Vacant: The structures have no current function
- Alternate Land Use: The structures that has current function even though having land use change different than the origin.

- Continuous Land Use: The structure keeps the same function from the beginning.

*Architectural Modification:* Interventions in historic districts can be indicator of redevelopment of parcel or loss of structure. In these cases, there could be mention about the historic value loss due to the decreased historic integrity (Newman 2013). The three measures of this variable are:

- Intrusion: The structure does not show its historical value
- Modified: The structure has a significant change on the exterior and the core
- Historically Significant: The structure protects the exterior and core still

*Building Condition:* Although surveying the physical condition of the structures is generally neglected issue, it is important to prevent demolition and to evaluate the viability of buildings (Newman 2013). The three measures of this variable are:

- Dilapidated: The structure is on the condition of deterioration or disrepair.
- Moderately Decayed: the structure is still and has been started to lose the historic value.
- Well- Conditioned: Structure is in good condition or have little decay.

2.2.2 Exporting Data to GIS Environment

Geographic information systems can be defined as a database system where most of the data is spatially indexed and a series of operations are applied to answer questions about spatial assets in the database. There are two types of data in geographic information systems; spatial and non-spatial. A spatial data is a kind of data that associated with attribute values of objects and these kind of objects can be described as spatial objects (points, lines, polygons). Spatial data includes data such as location, shape, and boundaries. Besides spatial information, non-spatial data are descriptive attributes. Non-spatial data can be merged into geocoded files with matching properties and displayed as normal maps. Each attribute takes the form of numbers or text, and these values can be qualitative (Gtiting, & Schneider, 1993).

In this section of the study, each building was geo-referenced to GIS environment. The scored variables by the Newman's Model were joined in attribute table for each building. All variables were sum up in different field in attribute table. Then buildings were divided in three different categories:

- Structures indicate historical value lose in a high rate (scores between 4-6)
- Structures indicate moderate historical value lose (scores between 7-9)
- Structures indicate high historical value (scores between 10-12)

In the second section of the study, each variable was conducted Hot Spot Analysis. Hot Spot Analysis uses vectors to determine the locations of statistically significant hot spots and cold spots in data. The z-scores, which is one of the elements in the hot spot analysis, represent the standard deviations of the analyzed features. A high z-score and a low p-value of the analyzed feature indicate that it represents a significant hot spot. Conversely, the low z-score and high p-value of the analyzed feature indicate that it represents a significant cold point. Hot spot represents the buildings which have protected historical value, and cold spot stands for the buildings which have lost historical value or no historical value in this study. In the Hot Spot Analysis, scores were color coded in the map. The red color was represented the high scored buildings (structures indicate high historical value). Then, the outcomes from Hot Spot Analysis tool were converted to raster data utilizing Inverse Distance Weighting (IDW) tool. The Inverse Distance Weighting (IDW) is a model that contains multi-variables. This model is based on an interpolation and simplifies analyzing irregularly spaced data (Shepard, 1968). Finally, the four raster data from the IDW analysis were overlaid using Weighted Sum Analysis. The outcome of this analysis visualized the three different category with the representative colors in street scape spatially:

- Area dense with structures maintain historic value (red color),
- Area transitory (orange color),
- Area dense with structures have not maintained historic value or modern (yellow color).

## 3. FINDINGS AND DISCUSSIONS

In the first section of the study each structure was surveyed and scored according to the measures (1, 2, 3) which fall under the variables. The higher score represents the higher potential of historical value; lower score represents the loss or non-potential of historical value. The total sum of four different variables of each structure are divided into three categories: 4-6 is non-historic or loss potential, 7-9 is transitory, and 10-12 is protected historic value. The Table 3.1 shows percentage and the numbers of the building on the 1469th street for each category. The historic buildings on the street constitute 28.75 percent of the street, while transitory buildings ratio is around nearly half of the street. This shows that the street has begun to lose its historical value (Figure 3.1) already and in need of emergent interventions to be protected and revitalize.

**Table 3.1** Total amount of structures in each category

| | n | % |
|---|---|---|
| **Historic** | 23 | 28.75 |
| **Transitory** | 39 | 48.75 |
| **Non-historic** | 18 | 22.5 |

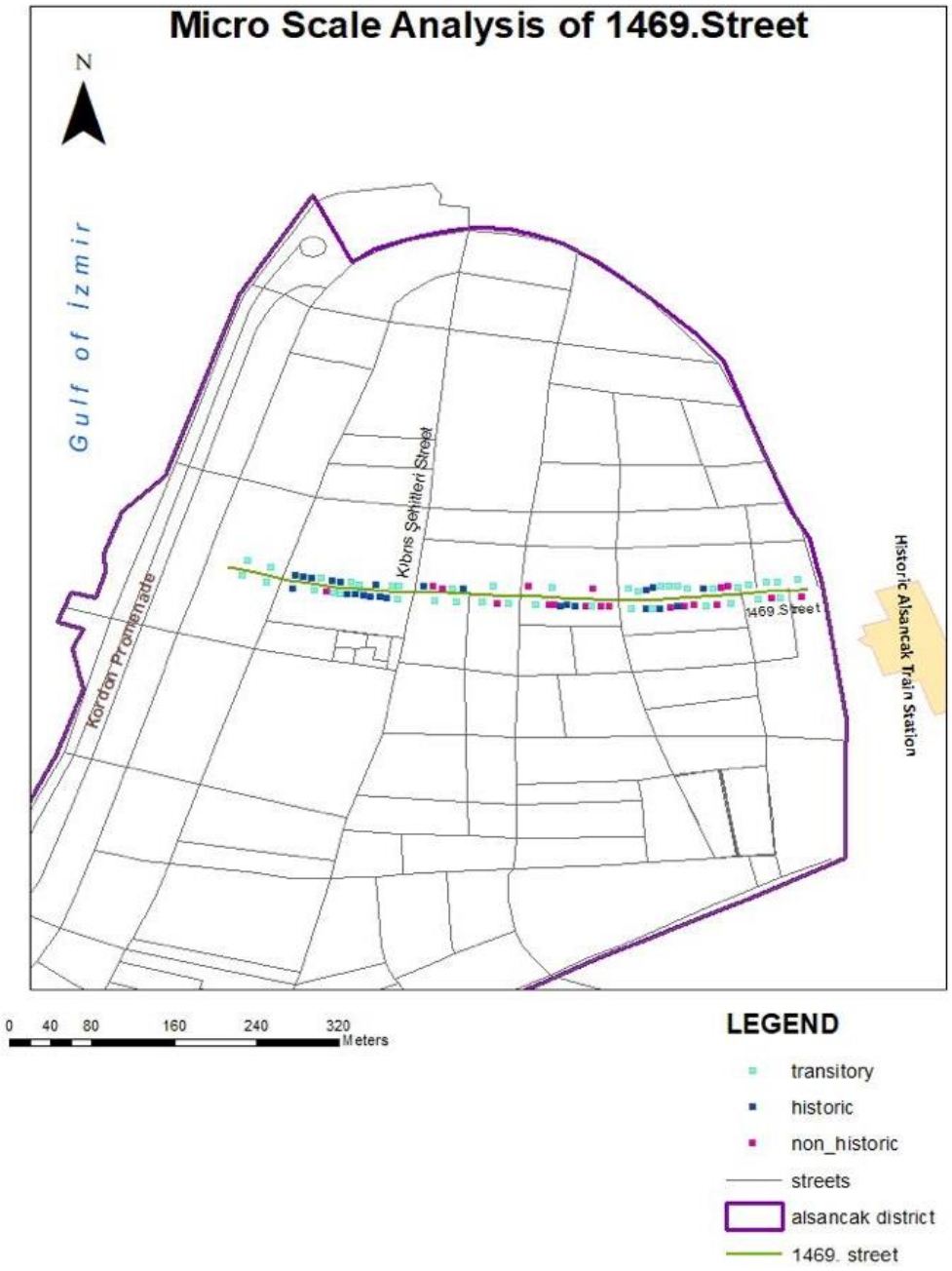


**Figure 3.1** Micro scale analysis of the study area

The findings from the IDW analysis suggest areal percentage of the historical, transitory and non-historic buildings' and their numerical density on the historical corridor. The Table 3.2 shows the (z) scores and the percentile breakdown coming from IDW analysis. Comparing the Table 3.1 and Table 3.2 it is seen that the areal the percentage of the non-historic buildings (41.77 %) is higher than the percentage of the total number of non-historic buildings (22.5 %). This suggest that the non-historic buildings are spread through the street and not densely located in on specific spot in general (Figure 3.2).

**Table 3.2** Percentage breakdown of IDW

| Building Conditions | Z Scores | Percentage of the Area |
|---|---|---|
| **Historic (Red)** | 2.49 – 8.24 | %24.36 |
| **Transitory (Orange)** | -1.46 – 2.49 | %33.87 |
| **Non-historic (Yellow)** | -7.52 – -1.46 | %41.77 |

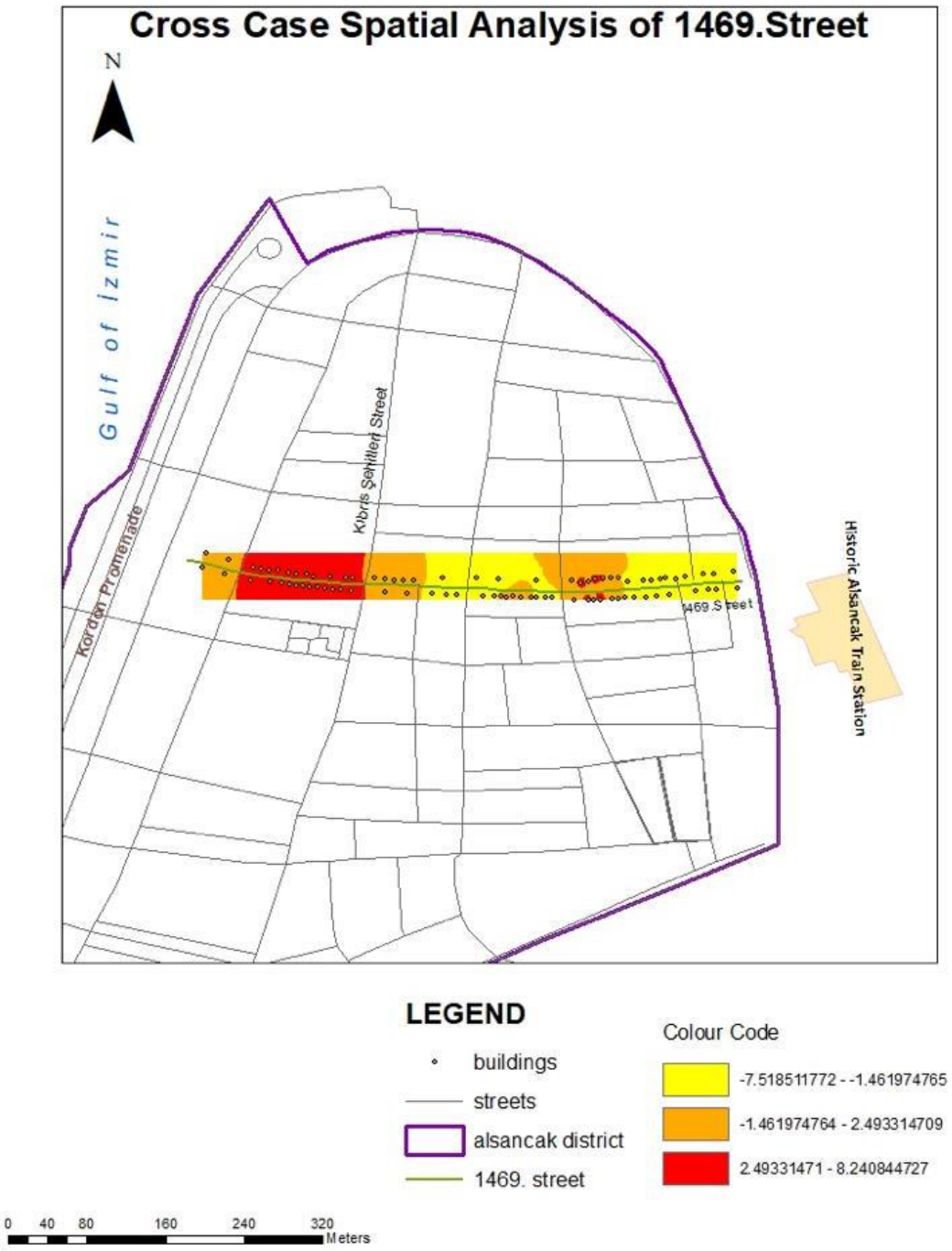


**Figure 3.2** Cross case analysis of the study area

Based on the field surveys and the findings from the analyses, a cultural and historical axis would be offered to make the street safe and viable in current use. Suggestions such as pedestrianisation of street use, organization of traditional events and celebrations, economical and aesthetical revitalizing for locals and tourist create an attraction in that spot. For this purpose, recalling the local values would be considered such as traditional local shops and restaurants such as fish restaurants, wine houses, olive and olive oil stores, local soap stores and local fabric stores would be considered by the investors. Enhancing Street with lighting and urban furniture, providing security, removing of asphalt road and use sustainable and traditional cobble (Arnavut) Stones would add a functional and aesthetical value. This Stones create permeable surface and provide rainwater management in a sustainable way. Taking advantage of the intersection of 1469th street and Kıbrıs Şehitleri Street, and connecting Historical Alsancak Station to the famous Kordon Recreational Shoreline are important land use strategies to be considered which put the Street forefront make this great location important pedestrian artery for the city tourism and sustaining the urban collective memory by protecting historic heritages.

## 4. RESULTS AND CONCLUSION

Based on the results, it can be said that the integration of comprehensive inventorying, attribute mapping, and Hot Spot overlay analyses is an effective way to locate and map urban conservation areas in need of regeneration. The field surveys were implied on the study area and two maps were created on ArcGIS software with the data obtained from the research field. The maps were interpreted and various results were indicated. While some of the historical buildings have been preserved their historical value in the area, some of them have been undergone structural changes and their functions have been changed due to economic, social and environmental requirements. Some buildings have become uninhabitable over time because of structural wear and tear. Hot Spot Analysis was used to identify the buildings that need to be restored, renovated, strengthened and adaptively reused along the historical axis 1469th street.

It has been observed that around 25 percent of the buildings protected their historic characteristics. Approximately 42 percent of the buildings lost their historical fabric due to neglect and several other reasons. Various recommendations have been offered such as multiple adaptive reuse, retrofit or renovation, to ensure the continuity and enhancement of historical heritage and revitalizing of the street as a historic corridor. Around 34 percent of the buildings are currently in transitory state. Protection and conservation of these buildings as historical heritage is also recommended applying the aforementioned suggestions, otherwise the historical characteristics of these buildings may not be transferred to future due to neglect. The modifications have been made on the historical buildings for maintenance and appropriation to the current usage, existence of modernly constructed buildings signify that historic integrity remains in the background, and in danger of being lost in the near future. Hence, retaining the viability of the buildings needs to be indicated and be put at forefront. Pointing out the location of historical buildings in advance to determine the changes in the historical heritage values of such buildings is very important as well as recording the obtained data and results. Gathering information provides identification of neglected and damaged historical buildings over time. Thus, critical buildings should be monitored carefully and be under intervention in a timely manner to sustain.

### Compliance with Ethical Standard

**Conflict of Interests:** The authors declare that for this article they have no actual, potential or perceived conflict of interests.

**Ethics Committee Approval:** Ethics committee approval is not required for this study.

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