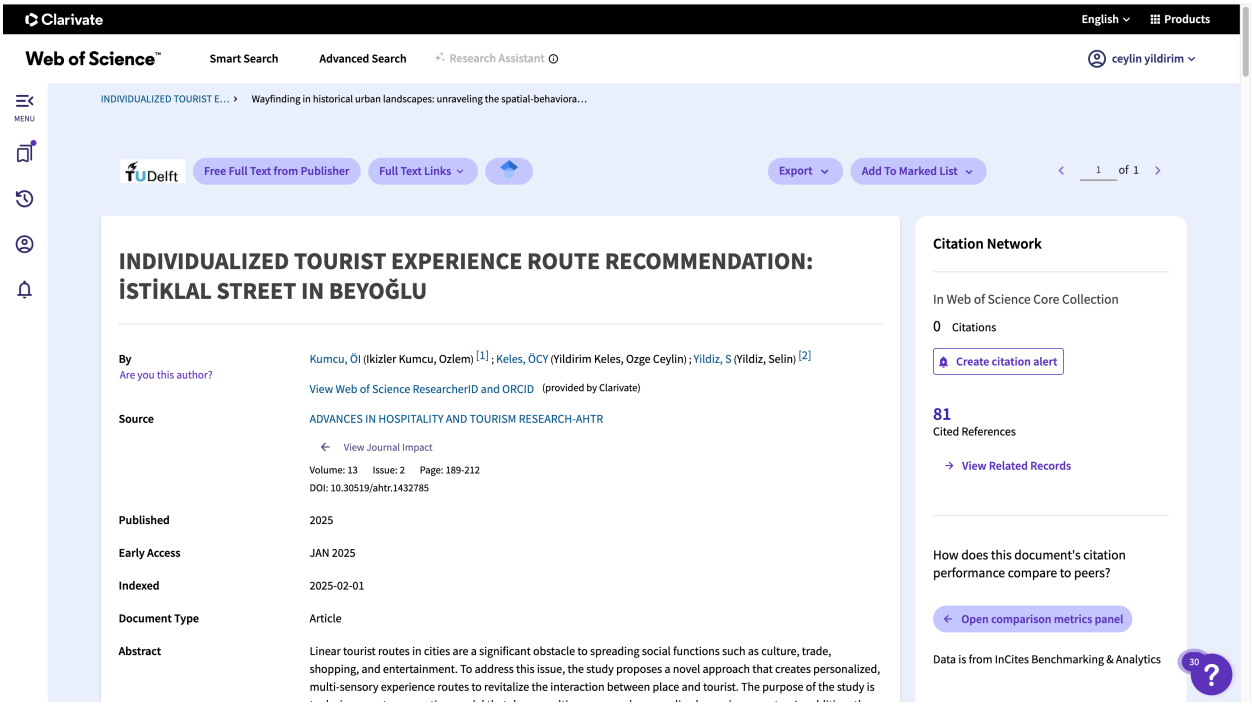
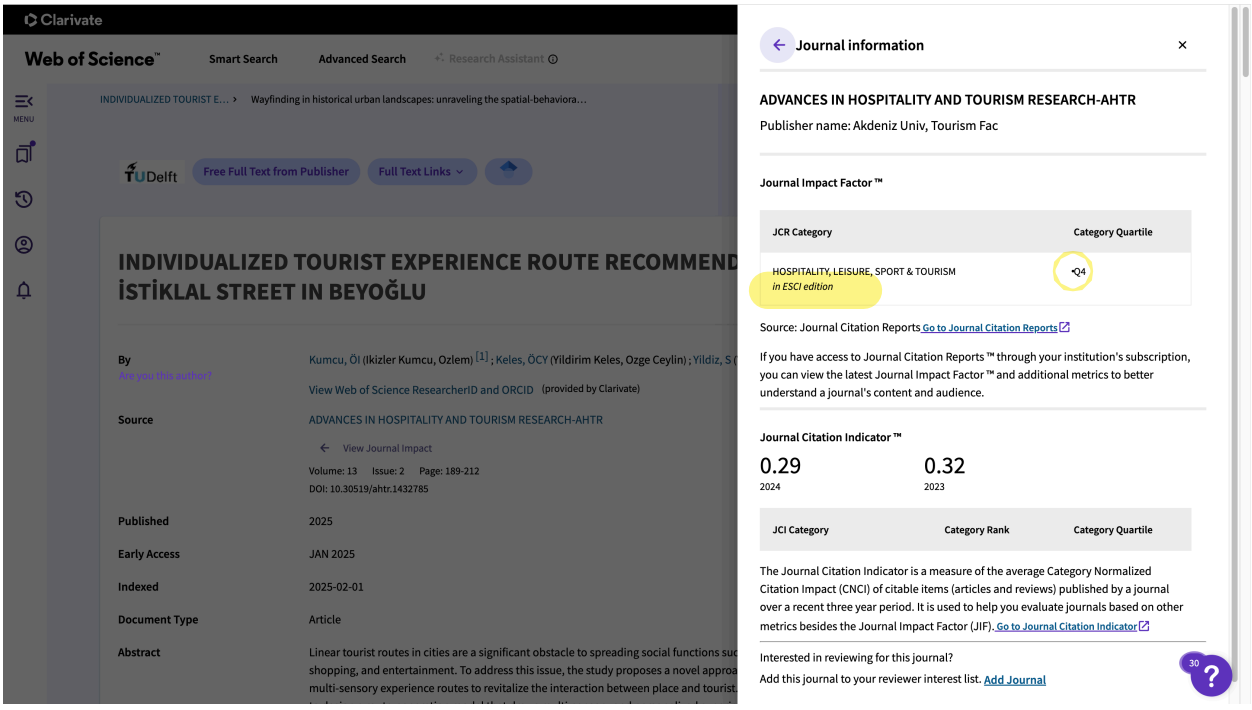
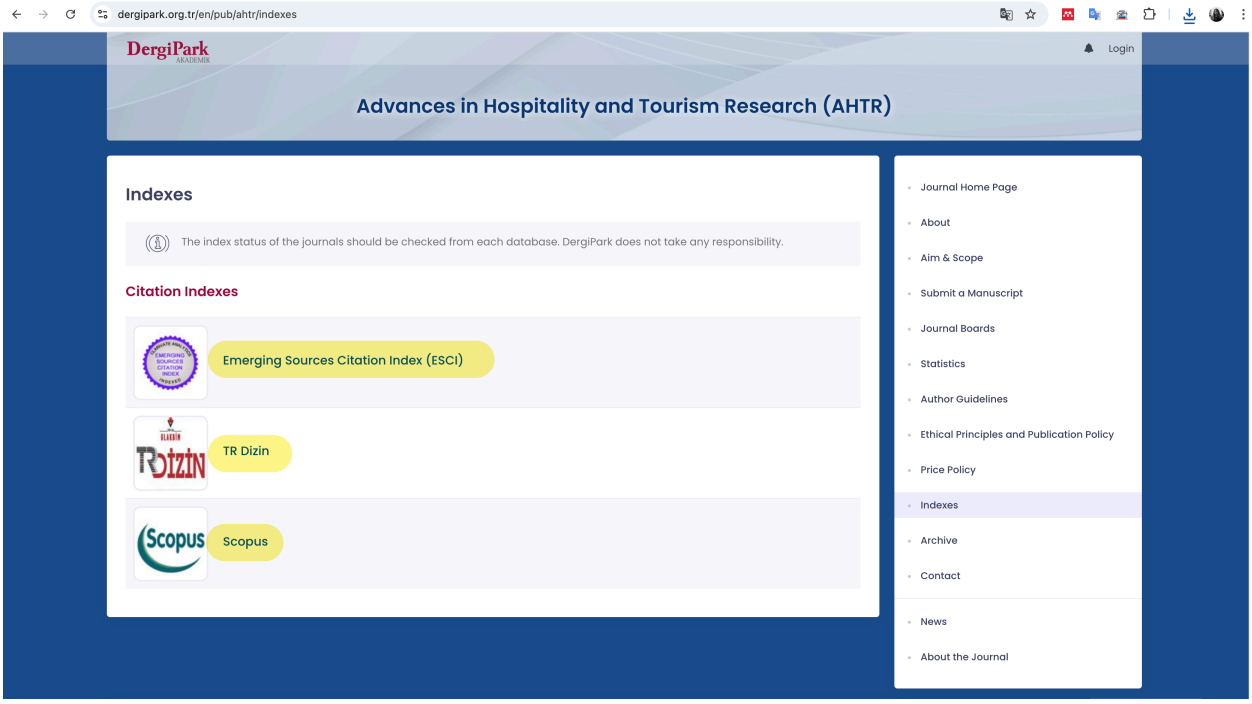
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INDIVIDUALIZED TOURIST EXPERIENCE ROUTE RECOMMENDATION: İSTİKLAL STREET IN BEYOĞLU

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ABSTRACT

Linear tourist routes in cities are a significant obstacle to spreading social functions such as culture, trade, shopping, and entertainment. To address this issue, the study proposes a novel approach that creates personalized, multi-sensory experience routes to revitalize the interaction between place and tourist. The purpose of the study is to design a route-generation model that draws multi-sensory and personalized experience routes. In addition, the importance of multi-sensory experience associated with the concept of 4E (Entertainment, Education, Esthetic, and Escapist) in tourism is emphasized. The design of the model was carried out with datasets collected from 80 different small and medium-sized workshops in four different themes, each containing 20 points of interest (POI), located in Beyoğlu which is one of the important historical centers of Istanbul. In this way, the route generation model allows tourists to have a multi-sensory experience; it provides personalization according to the content, location, time, and budget preferences of the tourists, and experience routes are drawn. Newly proposed routes for historic city centers aim to provide a more personalized tourism experience by revealing hidden gems based on tourists' senses and 4E preferences.

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INTRODUCTION

The notion of tourism is about seeing and exploring new places, there is a substantial experience in itself. The tourist experience is complex since the way they interact with the place and people encountered, and how they understand it are varied (Sharpley & Stone, 2015, p. 199). A lot of research has been done to define and understand the nature of the tourism experience. Unforgettable or extraordinary experiences that have gained a place in tourists' minds during the journey are emphasized in literature (Cohen, 1979). The importance of the tourist experience carried out during, before, and after participation, increases in literature (Hoarau-Heemstra & Eide, 2016). Tourists become both creators and participants of their experiences. The concept of experience in tourism is closely related to the experience economy. According to Pine and Gilmore (1998), the experience economy consists of four realms: Entertainment, Education, Esthetic, and Escapist (4E). The four realms of experience are explained in detail under the title Route Experience.

At the beginning of the 21st century, a new sustainable, physical, and socially sensitive period started in tourism (Madjoub, 2015, p. 115). The new tourism concept appeals to individual interests rather than package group trips (Poon, 2003, p. 132). Within the framework of this new understanding, it is necessary to draw attention to the role of participants' senses in developing tourism experiences (Agapito et al., 2016; Mateiro et al., 2017; Rahmani et al., 2018). The tourist ceases to be a spectator and starts to become a participant. Therefore, standardized tourism content is replaced by experiences designed according to individual demands. In this new understanding, tourists are stripped of their traditional passiveness. It allows them to accumulate memories appealing to all their senses by communicating with the place and people who shape the experience (Andrades & Dimanche, 2014). A memorable tourism experience is created by encouraging visitors' personal participation based on senses including the individual's senses of taste, hearing, sight, touch, and smell, the situation, and the factors that affect their thoughts and behaviors regarding the city (Ballantyne et al., 2011, Meacci & Liberatore, 2018).

The process sometimes refers to route tourism which aims to link various attractions. The attractions, independently, cannot be able to entice visitors to spend time and money, however, several attraction points having a synergy effect of a route, have greater pulling power (Meyer, 2004). Route tourism also refers to the terms like "themed routes", "trails" and "scenic by-ways" (Hasriyanti et al., 2018; Murray & Graham, 1997). Regarding tourism

experiences, which Schmitt (1999) sees as dynamic, reflective processes, Urry (2002, p. 152) develops the concept of "sensory landscapes" by finding that tourism experiences that only include landscapes are insufficient. Urry demonstrates the importance of including not only landscapes but also other sensory forms in the tourist experience as sensory and perceiving bodies perform. Considering the multisensory nature of tourists' experiences, Dann and Jacobsen (2003) point out that successful tourism destinations should not be content with offering only visual stimuli but should attract visitors by allowing experiences that include all the senses.

When tourists explore the city, they can plan the process according to their goals, preferences, knowledge, economic situation, and time. Some guiding tools are needed to experience the route and to plan it in the best way. These tools can be mobile city guides, route planning applications, information on the websites of municipalities and ministries, travel blog posts, and social media applications (Wang et al., 2010; Yuan et al., 2019). Thus, tourists plan personalized experience routes, far beyond a basic sense of travel by providing personal discoveries where individuals enjoy the city they experience, explore genius loci, and develop intellectual capacities.

Tourism experience covers both senses and behavior (Fesenmaier & Xiang, 2017). This experience involves individuals' sensory and behavioral questioning by creating a relationship between the real world and tourists' self-identities (Aydın & Omuris, 2020; Handler & Saxton, 1988; Pine & Gilmore, 1998). Therefore, individuals need to experience a multi-sensory, memorable, and personalized experience in line with their desires and goals. In addition, it is predicted that the tourism experience which they can plan and personalize will impact accessible, inclusive, suitable, and positive consequences for their well-being. However, recent literature neglects the power of the senses in the tourism experience. Researchers have suggested that one or two senses are related to the tourism experience (Dann & Jacobsen, 2003; He et al., 2019; Kim & Kerstetter, 2016; Su & Zhang, 2020). The paper problematizes the tourism experience which neglects senses and/or focuses on the popular point of interest (POI). Moreover, in this paper, the importance of multisensory experience in tourism is emphasized, and multi-sensory experience integrates with the 4E concept of Pine and Gilmore. In this context, one of the most crowded areas of Istanbul, which has a lot of transformations from the past to the present and differentiated by its social, cultural, and economic structure, personalized experience routes will be drawn in Beyoğlu and Istiklal Streets.

The distant goal of the study is to include a multi-sensory tourist experience in route planning. Based on this goal, this paper aims to produce a route-based generation model and demonstrate the potential of this model. In this regard, the sub-objectives of the paper are;

1) To design a new tourism route generation model that generates personalized experience routes based on multi-sensory experience, location, and time preferences.
2) To produce datasets in Beyoğlu for the proposed route generation model.

The study consists of three main sections as theoretical background, methodology, and findings. Theoretical background focuses on Route Experience, Route Design and general information about (Beyoğlu) the study area. The research methodology reveals the stages of the study and contains the datasets, 4E schemes, and route generation model. The result section evaluates the findings of the multi-sensory tourism experience with the proposed model. In the conclusion part, some predictions and potentials of the proposed model are mentioned to inspire further research.

THEORETICAL BACKGROUND

Route Experience

Current tourism research emphasizes the value of participatory tourism. In tourism, there is a human-centered approach in socio-cultural and technological contexts that participates in all processes, focusing on the design of the tourist experience rather than the design of the destination (Fesenmaier & Xiang, 2017; Panagiotopoulou & Stratigea, 2017; Tussyadiah, 2013). Under the guidance of Smith (2007), who emphasizes that the senses are variable as a product of place and time and draws attention to the historical nature of the senses, the variability of the experiences consisting of these senses also comes to the agenda. While experiences are associated with the person's perception, cognitive processes, and past experiences, designing tourism experiences is associated with getting perceived value and meaning at the time of meeting tourists and destinations (Agapito, 2020; Tung & Ritchie, 2011). The nature of the tourism experience includes environmental, sensory, emotional, and behavioral dimensions (Fesenmaier & Xiang, 2017). Recent research has expanded on the desire of the tourist to relive that experience and share it with the people (Agapito, 2020; Lv et al., 2020). Planned tourism routes on sensory stimuli and experiences, their approaches have resulted in sustainable, more positive tourism experiences for everyone, with individual diversity (Pan & Ryan, 2009; Richards et al., 2010; Small et al., 2012). However, while previous

tourism studies focus on visualization and consumption in destination planning, researchers are now focusing on the fact that the tourist experience is so sense-oriented (Jiang, 2020). Because the senses are considered the basis for how individuals interact with their environment, these interactions determine the quality of experience and the process of making meaning (Goldstein, 2014; Rodaway, 2011). In that regard, senses have gained attention in the participation of tourists in tourism and the conceptualization of experience tourism.

Several events, involving the individual's senses, perception, and cognitive memory in the process of experiencing a destination, include key steps in the design of the tourism experience (Volo, 2009). The main factor influencing tourist satisfaction, engagement, and long-term memory is having a meaningful experience in exploring the area. Pine and Gilmore (1998) emphasize the importance of the experience approach in economics by saying that "The more senses an experience engages, the more effective and memorable it can be." and evaluated the experience economy in four dimensions. This concept has been interpreted concerning tourism and has been the focus of many discussions (Binkhorst & Dekker, 2009; Kim et al., 2012; Mehmetoglu & Engen, 2011; Oh et al., 2007). The importance of the tourism experience has been stated based on the experience evaluation of the individual (Kim et al., p. 13). In these studies, Pine and Gilmore's 4E concept was discussed, and the relationship between tourism and experience, memorable experience tourism, and multifaceted interaction with actors were explained.

Experience, which is relatively a new element in tourism, makes spending time on the routes more adventurous. So, in what sense is the concept of experience new? According to Pine and Gilmore (1998), this innovation is designing, producing (staging), organizing, estimating, and pricing of “experience”; innovation is hidden in the fact that experience has a fundamental strategic concern. According to them, the 4E are Entertainment, Education, Esthetic, and Escapist (Figure 1). They are categorized into two directions; one is from "Passive Participation" to "Active Participation" and the other one is from "Absorption" to "Immersion". Education and escapist experiences represent active participation while entertainment and esthetic experiences represent active participation. In the other direction, education and entertainment (absorption) experiences need to take guests' attention while aesthetic and escapist (immersion) experiences need tourists to be physically a part of it (Loureiro, 2020).

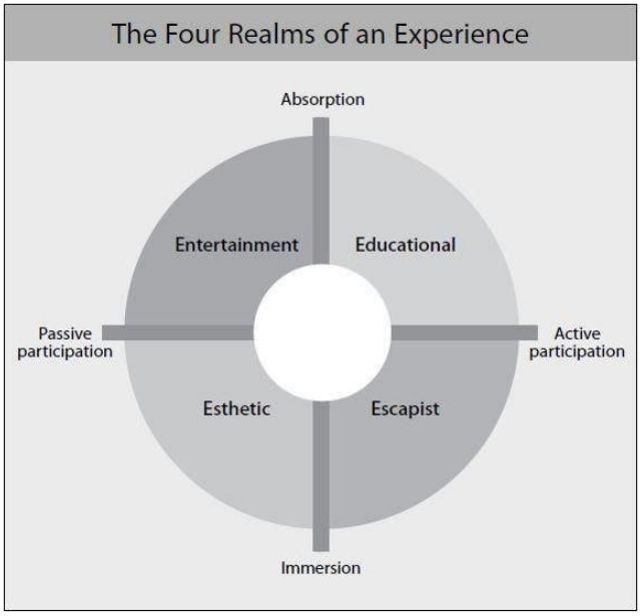


Figure 1. *4E Schemes*

There is a growing demand for the creation of experiences in which the tourist is more participant and interactive (Bruin & Jelinčić, 2016; Buonincontri et al., 2017; Morgan et al., 2009). The quality of experiences helps tourists improve their identity, increase their capabilities, their cultural levels, and explore their unknown values (Mehmetoglu & Engen, 2011; Morgan et al., 2009). Experienced designers need to increase tourists' interaction with destinations, dwellers, and other tourists, to enable tourists to explore a multi-sensory environment, to unlock their creative potential in their experience of tourism (Buonincontri et al., 2017; Cabiddu et al., 2013; Campos et al., 2015). Co-creating interaction between tourist and experience designers is explained in parallel with the "dynamism" of "experience design" (Richards et al., 2010). While the dynamism is increasing, the distinction between designers of experience and tourists is decreasing.

Experiences are first perceived by senses, from several filters (social, cultural values, previous experiences, memories, etc.) in the tourist cognitive process that makes sense or is interpreted (Kim & Fesenmaier, 2016; Tussyadiah, 2013). The process of decision-making and evaluation of the route experience is considered to be related to the experience. However, current research consists of sensory tourism experiences such as smell scapes (Dann & Jacobsen, 2003), soundscapes (He et al., 2019), taste scapes (Su & Zhang, 2020), and tactile, which include the singular or several senses. Although the importance of multi-sensory experience and inclusive tourism approaches is increasing (Agapito & Chan, 2019; Kim & Kerstetter, 2016), investigations into the tourist's multisensory experience are very

limited. The study aims to address this deficiency and to propose a route generation model, in which multiple senses are involved in the tourists' experience process.

Route Design

Nowadays with technology growing rapidly, the demand for tourists changes in both behavioral and experiential aspects (Panagiotopoulou & Stratigea, 2017). Their travel goals tend to experience meaningful, multi-dimensional experiences by switching from the need for "rest" to the demand for "experience and learn" (Small et al., 2012). This tendency is supported by information and communication technologies for tourists who want to explore new places, flavors, cultures, experience, design, and plan experiences. To provide a personalized, dynamic, and flexible multi-dimensional participatory route experience, it is necessary to understand tourist behavior and offer a personalized POI recommendation and travel route planning (Sørensen & Jensen, 2015; Wong & McKercher, 2012). Route personalization is a way to achieve active participation in the route determination process and to increase the quality of experience according to tourist behaviors and preferences.

The diversity between the changing demands and profiles of tourists choose their own set of routes, which they can personalize instead of pre-organized routes or tours (Rodríguez et al., 2012). However, to achieve a personalized route, tourists need to gather a lot of information and plan routes by evaluating many alternatives based on their contact profile. Despite the benefits of information and communication technologies, it is a very complex and challenging business (Rodríguez et al., 2012; Zheng et al., 2017). Many studies are carried out to facilitate routes and to determine the most accurate options between alternatives. Studies on this subject; POI lists are proposed according to different users and preferences and a route is created in this context (Mckercher & Lau, 2008; Tsai & Chung, 2012; Xia et al., 2011; Zheng et al., 2017). Within this scope, there are route planning studies with personalized preferences of tourists such as budget, time, and activity in many different venues and themes.

Lee et al. (2009) in Tainan, the personal choice route is recommended by rating the city's heritage values and gourmet culture based on its popularity. Batet et al. (2012) focused on how to provide personalized recommendations of cultural and leisure activities when tourists arrive at the destination. These and many other studies have focused on different cultural values and themes (Ardissono et al., 2011; Lu et al., 2016; Zheng et

al., 2020). However, the research was conducted on a limited scale, and popular POIs generally, which are regarded as negative in this study.

When the studies in which technology is used actively are examined; it is recommended to provide instant access to spatial, temporal, and POI information, information, and communication technology tools, especially with mobile devices, and to plan routes in line with personal profiles and demands, where the tourist can personalize their experiences. First, the GUIDE system was designed as a mobile tourist guide for Lancaster city tourists (Davies et al., 1999). Schneider and Schröder (2003) propose the "m-To Guide" project, a route is created between the starting and ending points of the travel, providing personal profiles, the purpose of travel, and the opportunity to exchange information for the tourist according to the type of transportation. Another study is "MoreTourism" by Rey-Lopez et al. (2011). This study gives information about tourist sources according to user profile, location information, activity, and time. In the study conducted by Tarantino et al. (2019), a mobile application named 'GENnArí', which can offer personalized multi-day tourist routes, was developed. As seen in the mentioned studies, various algorithmic methods are used in different scales and scopes. In addition, mobile applications are developed that offer route suggestions based on personal preferences based on the people's location and time values.

Furthermore, the most important deficiency in these studies appeals to specific community values when mentioning personal profiles and requests. But people are very diverse, they have different levels of perception, mobility, and cultural levels. To develop recommendations for all in a common language and inclusivity, it is necessary to prioritize perception. However, by creating databases across popular and large-scale POIs in all studies, personalization is recommended and experience quality and levels are ignored. In the context of this paper, the route planning system is being developed over small and medium POIs, focusing on exploring unknown values, rather than popularity, which appeals to multiple senses. In addition, budget, and time (short, medium, and long-term) route alternatives are offered, providing comments and feedback from tourist experiences that are another deficiency from many studies and a self-developing model proposal.

Beyoğlu District

Beyoğlu is one of the central districts of Istanbul, which has witnessed history with its socio-cultural, economic, and political layers, and has many

functions such as culture, art, entertainment, and business. It is at the upper part of Galata, the region determined by Istiklal Avenue, and the streets opening between Tünel and Taksim today (Tekeli & Eyice, 1994, p. 224). Having different ethnic groups throughout history, Beyoğlu has become a region where rich merchant mansions and luxury stores are. The district, which has been changing and transforming in every period of history, is one of the most frequent destinations of tourists with its impressive street structure, bearing the traces of history and the effects of various architectural styles. However, old town taverns, patisseries, passages, and coffeehouses have turned into institutions that bring more profit as a consequence of the change in the socio-economic situation, the increase in the population, and the acceleration of life (Cezar, 1991). Providing social, cultural, and artistic activities and shopping opportunities, where both service and trade units are located, Beyoğlu is offered for consumption with its historical and touristic features.

According to Tanyeli (2017), the inner connection of the actions of "demolish" and "construct"; the necessity of demolishing the old to construct the new, the conditioning of each new to the old, and the liquidation of the old reveals the reality of Beyoğlu. As days pass, Beyoğlu is detached from its historical context and culture; it loses its identity by damaging the sense of belonging. It has started to lose its functional continuity because of the changes in the physical structure of the district and gentrification attempts.

The main street of Beyoğlu is Istiklal Street, which has been called also 'Grand Rue de Pera' (big Street of Pera) and has had a lot of modifications from the 1990s until now. After the 2000s, Beyoğlu municipality led urban renewal projects and capital-oriented urbanization to come to the fore in Istiklal Street (Kartal, 2021). Spatial articulations, demolitions, and regeneration brought about by the social change in Beyoğlu caused the region to take on a new identity. Because the user profile is changing, social disconnections are observed as well. The most important factor at this point is the destructive and transformative effect brought by tourism. In this context, the study focuses on medium and small-scale Music, Art, Design, and gourmet-themed ateliers, which have to change place frequently or close down. They have the potential to reduce the destructive effects of tourism by the fact that they reflect Beyoğlu's unique values and identity.

METHODOLOGY

The method used in the present study consists of a literature review, creating data sets, and drawing the routes (Figure 2). The conceptual framework of the study was developed by researching the existing literature. To determine space boundaries and potential movement lines, a space syntax analysis is used which conducts connectivity and integrity measures of Beyoğlu. This analysis can examine spatiality on different scales, from urban texture to the building scale (Hillier et al., 1976). Spatial boundaries have been determined through "natural movement patterns" of human behavior and pedestrian movements (Hillier et al., 1993)

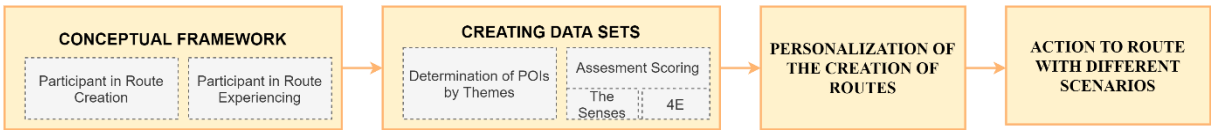


Figure 2. *Research Working Flow*

Accordingly, it is seen that the urban open spaces on Istiklal Street, from Taksim Square to Galata Tower, are well-connected to the surroundings. Within the examined network, physical accessibility and social interaction potential are higher in red, yellow, and green colors, while decreasing through the blue color (Figure 3). Thus, the boundaries of the study area are determined.

The popular POIs are concentrated on certain places (especially Istiklal Street) for tourists in the Beyoğlu district, and the standardized tourist demands prevent tourists from making discoveries about many unknowns of the district (Tekin & Gültekin, 2017; Uysal, 2013). It is observed that small-medium size POIs constitute an important place among these unknowns of the district. This is important for increasing the experience's quality and face-to-face interaction with the visitor (Apostolopoulou & Papadimitriou, 2014; Tzschentke et al., 2008). Norberg-Schulz (1980) named cities' specific characters as "genius loci" which is a phenomenological experience perceived with five senses. In relation, integrating five senses and 4E into the route experience signifies another theoretical limitation.

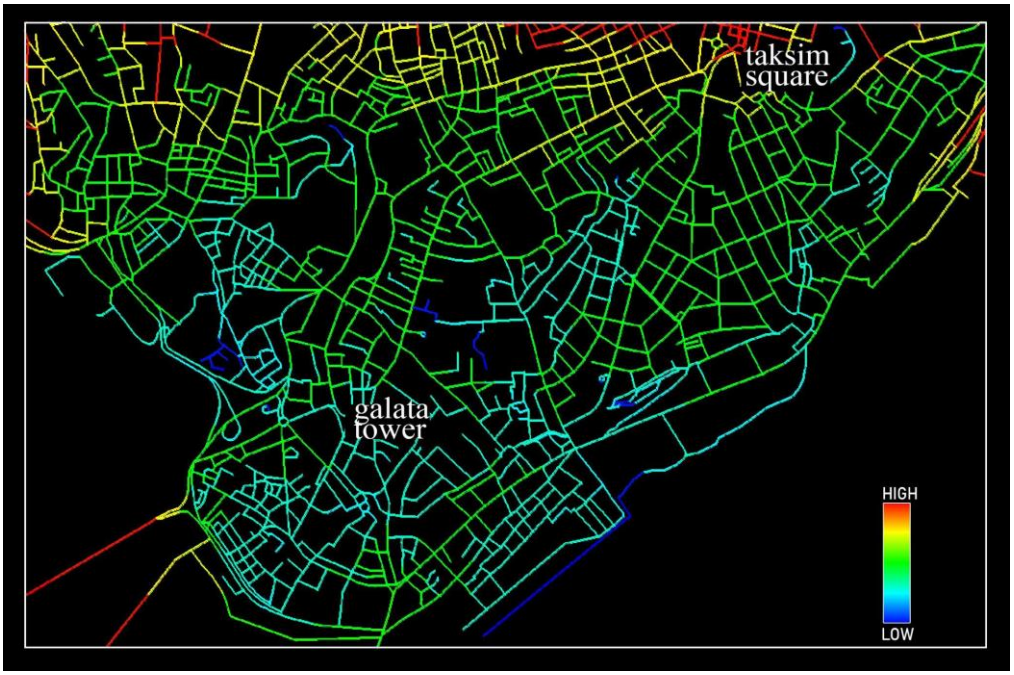


Figure 3. *Space Syntax*

As seen in Figure 4, four main themes were chosen in reference to the common public functions in Beyoğlu. The land use of Istiklal Street is mainly commercial consisting of mostly gastronomy, art, and designer shops. Commercial-residential mixed-use in nearby surroundings with small-scale stores on the ground floors (Beyoğlu Mekansal Strateji Planı, 2023). Consequently, spatial uses of Design, Gourmet, Music, and Art subjects came to the fore and they were chosen as themes of the study area.

Themes	POI (20 POI)	Location	Websites	Information	ASSESSMENT SCORING								
					- 1 2 3 +					0 (None) - 1 (Exist)			
					See	Hear	Smell	Touch	Taste	Education	Entertainment	Esthetic	Escapist
T1 _ Design													
T2_ Gourmet													
T3_ Music													
T4_ Art													

Figure 4. *Dataset Template*

Datasets are developed based on authors' observations concerning real-time and real-place experiences without further participants and 3-point Likert scale scoring system is used (Appendix 1). POIs of each theme are chosen from 20 different small and medium ateliers. Each POI was

evaluated specifically to five senses on a scale of 1-3 and 4E was evaluated on the scales of 0-1. In this manner, entire datasets were created.

About Datasets and 4E Schemes

Within the scope of the proposed model, information about 20 POIs selected in 4 different themes was collected in Beyoğlu and a database was created. In this section, datasets are shown on a map with related 4E schemes. For each dataset, POIs are shown on the map of Beyoğlu with a legend that explains the meanings of sense codes. In the map, each sense has its shape and color code that helps tourists understand which senses selected POI appeal (Wörndlet, Hefele & Herzog, 2017).

When the 4E chart of the Music dataset is created with the information collected from the study area analyzed, the sense of hearing comes to the fore in the entertainment section. Concerts are included in this section. It is also determined that some activities addressed the senses of seeing and hearing together. Instrument and sound training etc. were evaluated under the title of Education and it is observed that these activities can appeal to the see and hear separately and together. The music stores, instrument making, and repair workshops in Beyoğlu are perceived with hear and see senses and offer an esthetic experience to the tourist. Some events offer an Escapist experience. These activities are voice and percussion therapy, and recitals. The sensory combinations were determined as see-touch, hear-touch, and see-hear-touch (Figure 5).

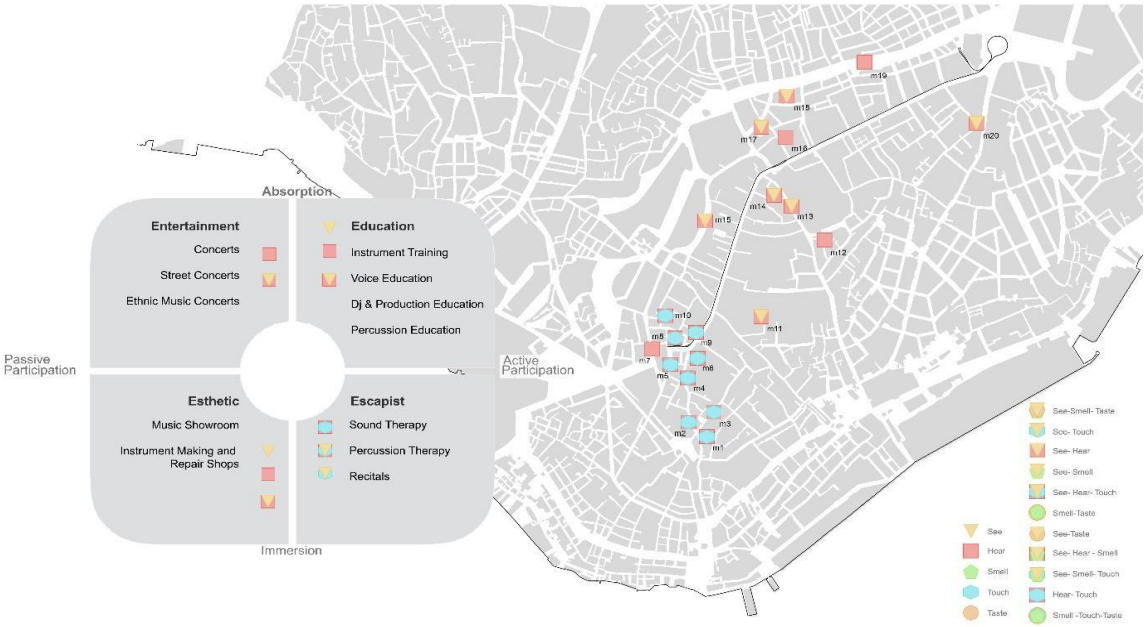


Figure 5. *Music Dataset and Music Route*

When the 4E chart of the Art dataset is analyzed, it is determined that watching a dance show and theatre activities in Beyoğlu are under the title of entertainment and they are perceived by see, hear, and see-hear combination. The activities, which are glass, ceramics education, etc. can be seen under the title of education experience. It has been determined that these activities are perceived mainly by the senses of see, hear, see-hear, and see-smell combinations (Figure 6). Painting, ceramics, etc. exhibition tours are under the title of esthetic experience and they are perceived with the sense of seeing. Dancing, acting, etc. are activities that offer an Escapist experience. These sensory combinations are determined as see-hear-touch, see-touch, see-hear-smell, and see-smell-touch.



Figure 6. *Art Dataset and Art Route*

In the 4E chart of the Design dataset collected in Beyoğlu (Figure 7), the activity that would appeal to the Entertainment experience could not be reached. When it comes to the education experience, jewelry-object design education, architectural design education, etc. are perceived with the senses of see, hear, and see-smell combination. It has been determined that the aesthetic experience can only be perceived with a visual sense in tattoo-piercing, leather exhibitions, fashion workshops, etc. Escapist experience can be experienced with the opportunity to be included in the design process offered by these workshops to tourists. Tourists experience the activity with their sense of see-hear-touch, see-touch, and see-touch-smell.



Figure 7. *Design Dataset and Design Route*

The rich gourmet contents of Beyoğlu reflect the 4E chart of the Gourmet dataset (Figure 8). The Entertainment experience section of the chart consists of local experiences, which are perceived by the senses of see and hear, such as going to the tavern and having a cup of Turkish coffee. On the other hand, activities like cooking and winemaking offer an educational experience that appeals to the see, hear, and smell. It has been determined that the aesthetic experience in the region consists of activities like historical bakeries, wine tasting, etc. These activities are experienced with the senses of see, taste, see-taste, and taste-smell. The tourist can pass from passive participant to active one, which means having an Escapist experience, by cooking local food and participating in activities accompanied by wine tasting. These activities offer experiences perceptible with see-touch-hear, smell-touch-taste, see-hear-smell, and see-touch-smell sense combinations.

About Route Generation Model

With the motivation of filling the gaps both in literature and touristic practices of daily life, a route generation model is proposed. The route can be personalized according to content, budget, time, and location limitations and POIs can be chosen from music, design, art, and gourmet datasets (Figure 9). Tourists are playing an active role both in the route design and route experience stages



Figure 8. *Gourmet Dataset and Gourmet Route*

● Content: Tourists can prefer one or several of the 4E concepts by associating them with the senses. According to their preferences, they will have possible routes that appeal to the feeling, mood, or activeness level that they wish to have.

● Budget: The amount of money that the tourist is expected to spend during the experience is determined by the application. The average budget is calculated for the required and optional expenditures on the route to be tracked. Like public transport fares and the fees for workshop activities that the tourist wants to participate in.

● Duration: Tourists can choose the most suitable time options for transportation, based on their travel period (hourly, daily, weekly) to have maximum experience time.

● Location: Tourist's location and POI locations are determined by application on the map.

The model's main inputs are content, budget, duration, and location limitations. When a tourist chooses any of the 4E concepts, the system retrieves all possible POIs that meet the concept. As the user continues to make choices, the route is drawn according to the user's preferences, and the final generated route is displayed afterward.

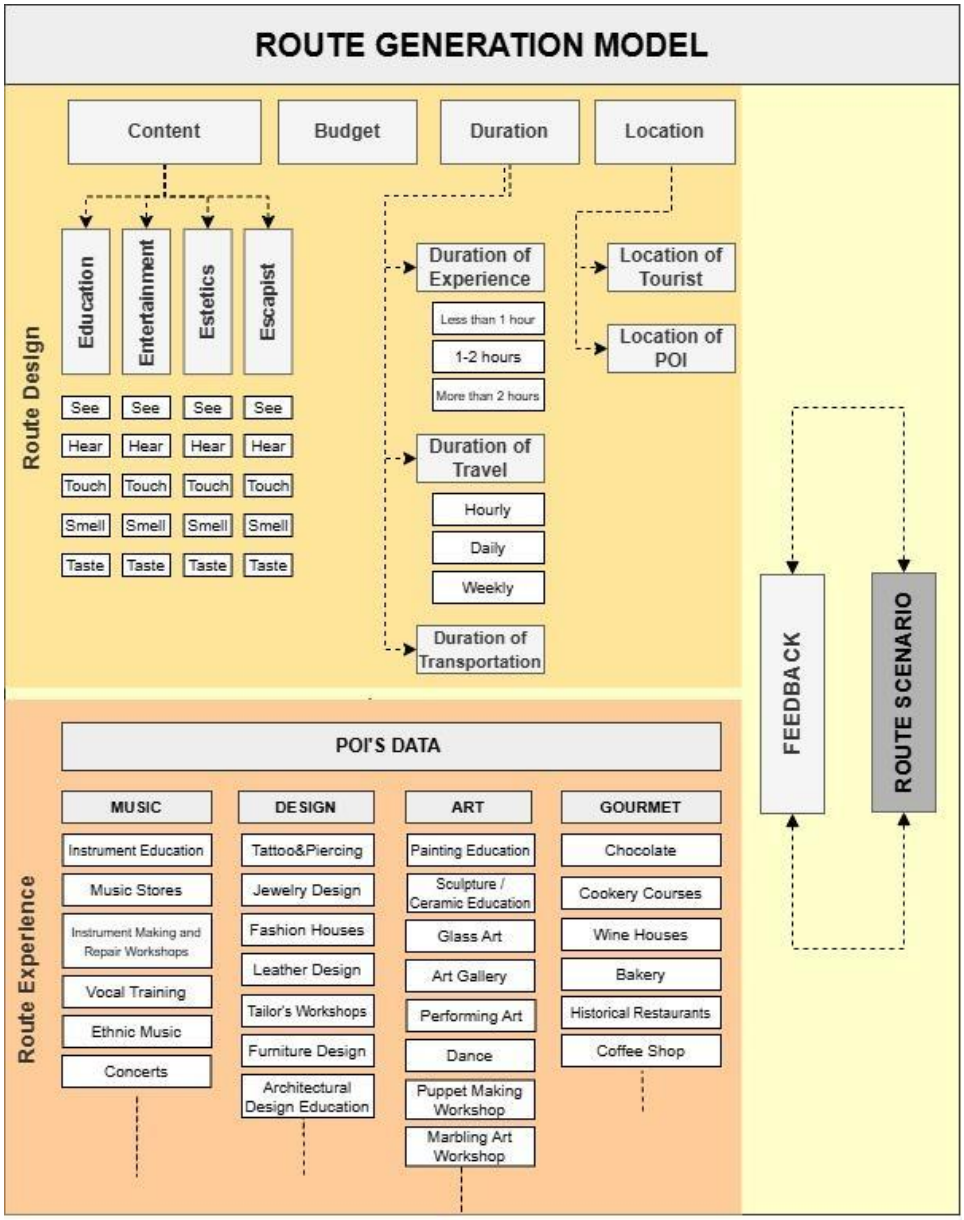


Figure 9. *Two Phases of Route Generation Model: Route Experience and Route Design*

With route preview, it is possible to access general information about POIs, budget, time information, comments, and evaluations made by tourists. This allows the POIs on the route to be moved, added, and removed. To complete the projected processes of the model, the tourists are asked to give feedback to the system with their evaluation and comments (Figure 10). The personalized route generation model, which itself is an element of design, is a kind of application that provides tourists with a multi-sensory experience.

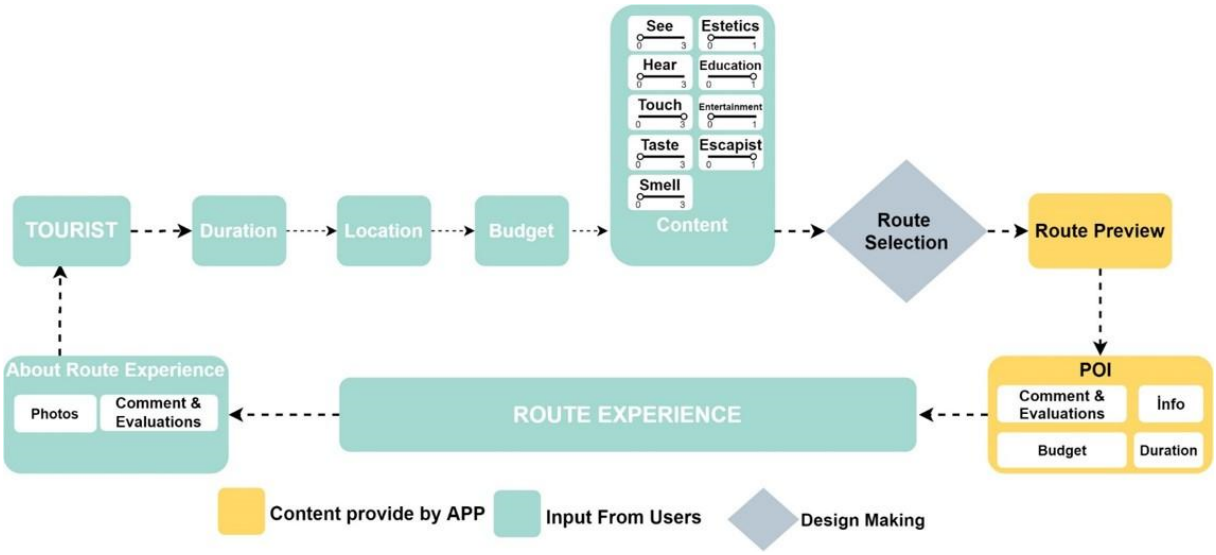


Figure 10. *Route Generation Model Working Flow*

Inspection of SCCs in the study area will be based on Doxey's Irritation Index and Butler's TALC model, which are often taken as bases in the literature (see e.g., Çavuş, 2002; Akdu & Ödemiş, 2018) as depicted in the small red bordered set of studies concerning case areas having both natural and/or cultural characteristics.

FINDINGS

Each dataset of four different themes has the feature of being a route alone. It is also possible to create a route that addresses multiple senses by personalization. Figure 11 shows a possible route scenario that could be generated by using the proposed model. It is a personalized route which is filtered by touch sense and active participation (education and escapist experience) , which is drawn by using the proposed route generator to show how the model works. As can be seen in Figure 11, "Touch" filtering was performed in the POI dataset. Then, POIs were filtered by active participants (Education and Escapist). As a result, a route consisting of 7 different POIs was created by the proposed route generator model for Beyoğlu. It can also continue to filter the route according to other preferences like budget, time, and location. In this way, more personalized routes can be generated with different preferences.

Implications from the dataset and 4E charts created within the scope of the study are:

- Activities of the study area perceived by "touch" sense generally offer an Escapist experience. It is seen that touch sense is mostly ignored in tourism however it has the potential to carry an experience in the most

immerse-active point. The experience of immersive participation with the touch sense creates a more memorable effect. The desire to share the experience with other people and re-experience increases.

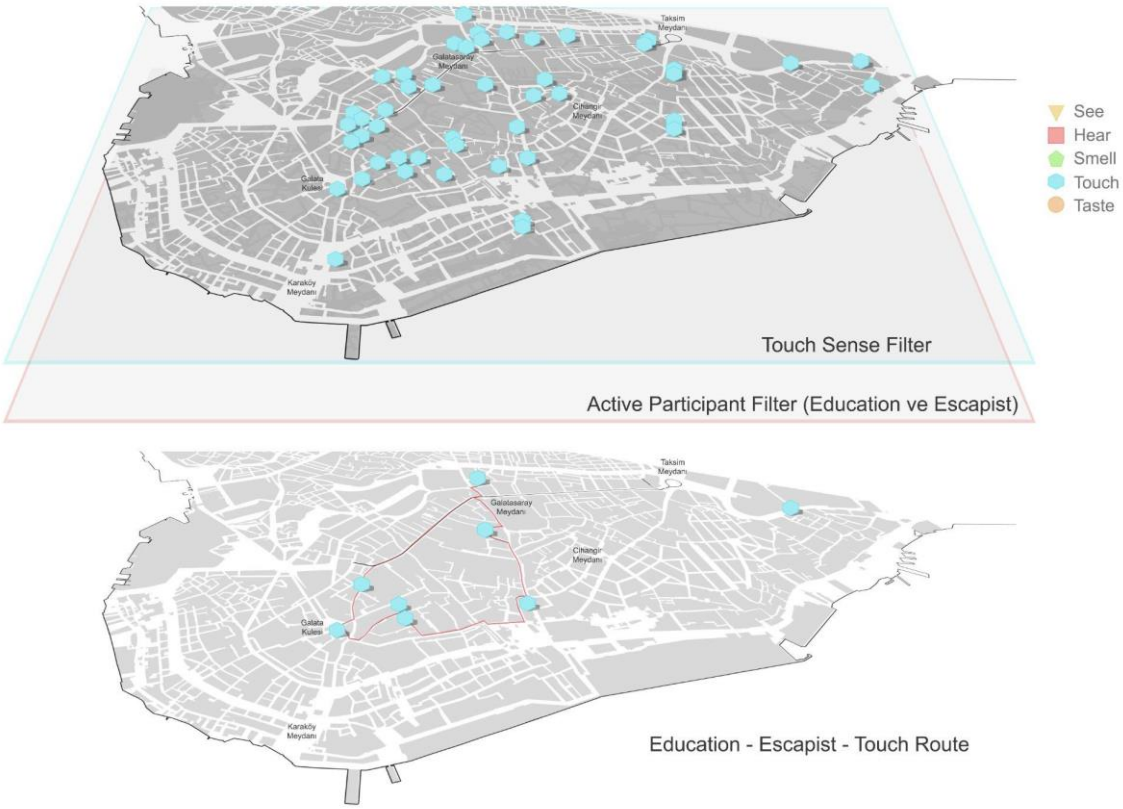


Figure 11. *A Route Scenario Generation (filtered by touch sense and active participation)*

- Activities in Istiklal Street perceived with the senses of see, hear and see-hear combination generally offer Entertainment experience. In this regard, the memorability of the experience and the willingness to re-experience is very low. To improve the entertainment experience in Beyoğlu, it should be supported with a variety of facilities (restaurants, coffee houses, etc.) and see-hear activities.
- Activities perceived by more than two senses generally constitute the Escapist part of the route experience. The tourist interacts with the city as a part of the space in the Escapist experience. By feeling the genius loci, the experience begins to occupy memory and creates a more persistent effect.
- No activity was observed in the Entertainment section of the design dataset. Various supportive and alternative organizations such as fashion weeks and shows, design festivals and biennials, architectural weeks, and arts and crafts festivals should be planned in Beyoğlu.

- Esthetic experience is perceived by only seeing in the themes of art, and design dataset.

In the route generation model, the interaction between Beyoğlu and tourists increases. The findings result in a higher recognition of tangible and intangible values in Beyoğlu as well as provide the city with a competitive advantage and economic improvement. This new route generation model enables tourists to discover unknown values and reduce the devastating impact of tourism in Beyoğlu.

CONCLUSIONS

A tourist route is no longer a simple trip, but an experience that is shaped according to the personal preferences of tourists and includes sensory dimensions. In this sense, the study proposes a prototype which is a new approach for tourist route planning in terms of its applicability in many areas for future studies. It has the importance of being an interdisciplinary study by using today's technologies to offer a better urban experience to tourists, improve the quality of route experience, store, and share information, and add new routes. In this context, the study results are as follows:

- Active tourism requires escapist experience as it supports multiple senses

- Personalized tourism experience draws attention to strengthening the connection between the built environment and the senses.

- It is not just a single sensory stimulus that shapes the experience process, but the interaction of all senses; in this way, tourists have a more comprehensive experience with route designs that allow different combinations of the 4Es.This model, customized according to each tourist's own preferences, has gone beyond standard tourist experiences and created more individual and meaningful results. It has the potential to reduce the negative effects of tourism in the region and contribute to sustainable tourism. The reduction of pressure on popular tourist areas and the discovery routes spread over a wider area have helped to protect the region.

- Tourism experience design should include a comprehensive and holistic multi-sensory approach rather than targeting only one sense, thus creating routes that suit each tourist’s personal preferences and sensory perceptions.

In the future, this model will be tested with more participants and it will superimpose various senses with the help of feedback from tourists. Furthermore, with the proposed route generation model, it is planned to develop a mobile application. The quality of personalized experience routes will be evaluated by the tourists to design a more flexible and more sustainable route generation model with their feedback. From this date onward, the proposed model is ready to be tested in other tourism contexts and cities.

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