An Analysis Of Re-Functioning Industrial Buildings The Merter Espressolab Roastery Case

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Abstract
Buildings that witnessed the Industrial Revolution, one of the turning points of history, bearing the architectural traces of the period and described as Industrial Heritage, can maintain their structural integrity despite losing their original functions over time. The aim of this study is to determine the satisfaction of the users regarding the buildings that were brought back to the city with a different function. Accordingly, the Merter ExpressoLab Roastery example was investigated and the success of the functional transformation, spatial setup, existing and added furniture in the space, furniture comfort, lighting elements, and the light balance created using natural light were reviewed in terms of architecture and user comfort. For the purposes of the study, a detailed literature review was followed by on site discovery. During this process, the features and details on the structure were visually documented by means of photographs and video footage. The visual data was recorded for subsequent analysis. Issues associated with user dissatisfaction were identified along with the reasons thereof. As a result of the study, it was concluded that the Merter Espressolab Roastery case was a successful refunctioning project from the user perspective.

Keywords: Refunctioning; Industrial Heritage; Sustainability; Preservation; Merter Espressolab Roastery

1. INTRODUCTION

The Industrial Revolution of the 18th century has been considered one of the milestones in human history. During the transition from human power to machine power, which started in the United Kingdom, continued in Europe, and then spread all over the world, small workshops proved to be insufficient and a need for industrial buildings emerged. Accordingly, the large buildings both allowed high-volume production and provided employment opportunities for wider labor force. In the context thereof, the effects of the Industrial Revolution were not only limited to economic field, but also had significant impact on social order, urban formation, and built environment. Although the industrial buildings were originally built outside urban settlements, cities rapidly grew and developed and therefore, industrial sites became a part of the main body of cities in a rather short period of time. Industrial buildings, which lost their original function as a result of ever-advancing technology, maintained their structural integrity in the center of cities. These buildings also bear the traces of the period, in which they were built, and add value to the identity of the city.

In the context of contemporary preservation approaches, buildings with architectural, social and cultural, aesthetic, scientific and social characteristics of the industrial period are considered a part of Industrial Heritage. The concept of preserving the industrial heritage was first introduced in the United Kingdom. This awareness paved the way for the development of a new discipline, i.e., industrial archaeology, which involved researching, identifying and recording heritage buildings. Those buildings in the scope of industrial archaeology were called industrial monuments.

Having been considered a part of national as well as an international heritage, those buildings survived from the Industrial Revolution have become a part an ongoing discussion on preservation and conservation.

Without a function, lack of maintenance and repair, and the massive scales brought those buildings to the verge of deterioration. A novel solution involved in the idea that such buildings could be repurposed for they can be preserved. Accordingly, reuse based on purpose other than the original was considered a necessary step given the cultural significance of the city to increase the quality of life (Köksal and Ahunbay, 2006), and it was emphasized that such buildings should find a place in the city in order to maintain their use value (Kenneth, 1999). It was suggested that when addressed via scientific methods, the reuse process supported better conservation (Özen and Sert, 2006), and that effective and continuous conservation was possible by keeping the structures alive by means of re-functioning that fit to today's conditions (Oral and Ahunbay, 2005).

The limits of such interventions are determined by national laws based on international conventions and charters governing preservation. There has been an increasing number of refunctioned buildings since the 1970s. In 1973, it was decided to establish an organization and the International Committee for the Conservation of Industrial Heritage (TICCIH) was established for the purposes hereabove. TICCIH organizes international meetings on a previously decided topic every three years, monitors industrial monuments, problems and developments ongoing in its member countries, and issues publications. TICCIH prepared the Nizhny Tagil Charter for the Industrial Heritage 2003 to be presented to the International Council on Monuments and Sites (ICOMOS) for ratification and for eventual approval by UNESCO.

The European Route of Industrial Heritage (ERIH) is another international network established in 1999, which focuses on industrial heritage as its main area of operations. ERIH aims to announce the developments in legacy industrial areas and create tourist interest. Accordingly, an "industrial heritage route" and various "anchor points" covering member countries was proposed by ERIH. The selection criteria for the anchor points included attraction value, historical value, symbolic value, originality value, touristic infrastructure, quality of the area, opportunity to offer new perspectives, public transportation network; road, bicycle and sea transport links, private transport network; and availability of road connections for cars and tour buses. Industrial buildings have also been included in UNESCO's World Heritage List.

A literature review was conducted in the scope of the study. The building was investigated on site to identify conserved areas and materials in the building, interventions and additions, and to review and capture the furniture and lighting elements used within the scope of functional transformation in terms of aesthetics and comfort. Accordingly, a questionnaire was completed by the users and the responses were tabulated. In the light thereof, the success of the Espressolab Roastery case vis-a-vis refunctioning was investigated. This study aimed to investigate the architectural criteria that should be taken into consideration in the scope the necessity of preserving and refunctioning the buildings as industrial heritage, which were the reflections of the architectural, aesthetic, sociocultural, and economic characteristics of the Industrial period, based on Merter Espressolab Roastery case.

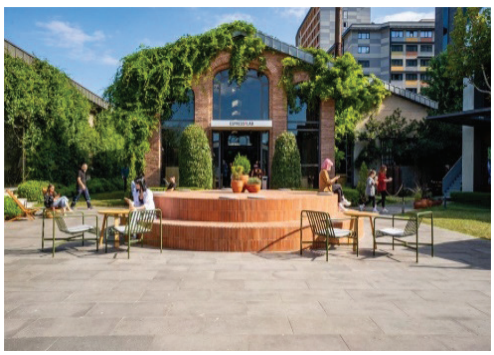
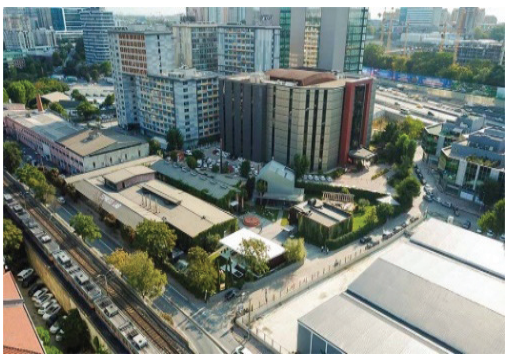
2. METHOD

2.1. Research Areas

Espressolab Roastery is located in an old industrial building, which was originally built as a cardboard factory in Merter, Istanbul, and then used as a textile factory. The building was then re-functioned and transformed into a coffee tasting and experience center with only certain additions, taking care not to damage any element of the building. The economy, ecological and social needs, and sustainable coffee farming were always been prioritized in production. Merter, albeit it is located in the city center today, was originally an industrial settlement. Before the Industrial Revolution, manufacturing facilities were located in areas close to waterfronts, nevertheless, location selection criteria include proximity to raw materials, workforce, and markets today. The biggest reason why Merter region was chosen as an industrial settlement was its great labor force

potential. It was a district close to the market and customers. It was also in a valuable position in terms of being easily accessible. Although having such a coffee experience center in the Merter region could be considered an 'eccentric' idea, EspressoLab has attracted the attention of the audience, especially individuals aged between 18-35 years, with its accessibility (proximity to a university campus) and the architectural concept ideas added by the transformation of the place, and has been a popular place to socialize. Different concepts were introduced in the space, taking into account the needs of the users visiting Espressolab Roastery.

Table 1. Research Area Features

Research Area	**EspressoLab Roastery Merter**	
		
Year of Construction	Textile factory (2000) - EspressoLab Roastery (2022)	
Location	Istanbul, Turkey	
Coordinates	41.01066036162023, 28.898559132409336	
Project Area	6,000 m²	

2.2. Research Method

A literature review was conducted on industrial age buildings and refunctioning issues. The place where the building is located was investigated by means of repeated observations at the end of 2023, and photographs and videos were captured. This was followed by a total of 50 face-to-face surveys on the uses of the space with users determined by random selection method. The surveys were analyzed using the Microsoft Windows Excel software. 3-point Likert scale was used for the participants could score the items included in the survey (good, bad, average).

3. RESEARCH RESULTS

Only one building was added to the original facility. The addition was built in a modern architectural style reminiscent of Mies Van der Rohe's Farnsworth House. Similar features with the Farnsworth House included white color, glass structure, and being disconnected from the ground. The structure differs from Van der Rohe's structure in that the load-bearing system was at the rear and there was a separate mass behind it. No intervention was made to the exterior of the building, and its design was conserved. The ivy that surrounded the facade of the original building was left intact, as it created integrity with the design and provided an aesthetic look.

Figure 1. Left: Espressolab added building, right: Espressolab outdoors (url1)

The space caters to multiple functions. Each building was designed according to the concept and the furniture elements were selected accordingly. The main building contains a bakery, beverage sales area, individual and collective study areas, and offices for company employees. Food is prepared and sold in the area reserved for the bakery. By a special arrangement of the height of the countertops where food is displayed and sold, customers are able to witness the production phase, creating confidence in the hygiene and quality of the products to be consumed. Wooden material was preferred for the counter, creating integrity with the roof of the building. Yellow light was preferred for lighting.

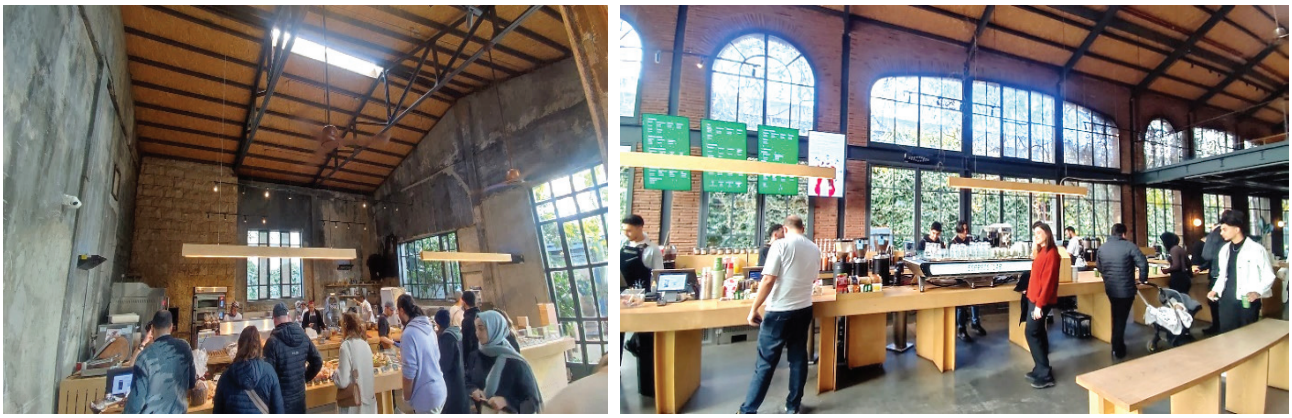


Figure 2. Left: espressolab bakery area, right: beverage sales area

The beverage sales area was positioned opposite the bakery at the entrance of the main building with an aim to prevent shoppers and seated customers from intermingling and provide separate circulation. The beverage counter was kept tall to provide movement space for employees. Proper circulation and avoidance of intermingling between staff and customers is a factor that contributes to increased efficiency and satisfaction in the place (Güvensoy, 2008).

Personal and group study areas are located at the back of the main building, and care has been taken to use comfortable and functional furniture. Another building was designed in two separate concepts, creating a coffee production factory and a calmer, dim, and quiet environment. On the quiet side, two-people furniture was used. Coffee is also sold in this section over a small metal counter. Tasting opportunities are provided for users to witness coffee production in the

Roastery. Large and comfortable furniture was chosen in the Roastery. Each piece of furniture was used differently and no integrity was intended. The workshop area is divided into two for practical and theoretical training. Wooden setting elements were arranged in front of a large presentation screen in the theoretical education area, creating integrity with the wooden materials used on the walls and ceiling with an emphasized sensation of space. The practical training area design includes a marble counter and stools around it. The lighting element was used in the same form and alignment with the counter. This wooden lighting elements, which were used in the practical training section is more prominent compared to other elements.

Figure 4. Left: Group Study and Sitting Areas, and Individual Study Areas; Right: Quiet Areas

Figure 5. Two photos from the left: Coffee Production Areas; 2 photos from the right: Theoretical Education Area and Practical Training Area

The cocktail area is the only addition to the original facility. An oval wooden open cocktail kitchen was designed within the building and bar stools were placed around it. Leather sitting elements and wooden tables were used around it. Small containers in the area were divided into sections and group work environments were created. The interior is completely covered with wood. In another structure, every stage of coffee production is shown by placing a screen in front of the amphitheater type of sitting areas.

Figure 6. Left: Cocktail Area and Container Area (URL1); Cinevizyon Amphitheatre Area (URL1).

Open areas were emphasized with floor differences and metal and wooden furniture was preferred in open areas.

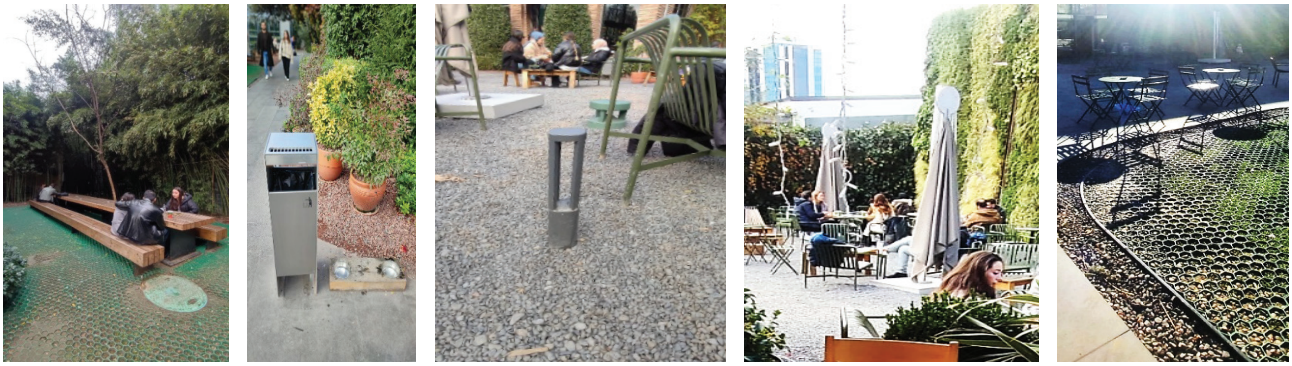


Figure 7. Open Spaces and furniture

Lighting elements used in open areas were preferred on the floor, creating modern style and simple design models. Superficial textures may create different perceptions depending on whether the light source is dominant or in equal proportions (Aymelek, 2019). A metal trash bin, which combines an ashtray and trash deposit area, was preferred in the open places. The trash bins were placed at certain edge points.

Upon on site investigation, a 10-item questionnaire was completed by a total of 50 users to investigate the satisfaction thereof. Demographic information of the users participating in the survey is given in Table 2.

Table 2. Socio-Demographic Results

Demographic Information			
Information	**Features**	**Number**	**%**
Sex	Female	18	36%
	Male	32	64%
Age Range	18-25	28	56%
	25-35	32	64%
Level of Education	Higher Education	40	80%
	Secondary Education	10	20%

Table 3. Responses to Survey Items

Items		Responses		
	Good	Average	Bad	
1	Do you think it is noticeable that the building is a repurposed industrial structure?	84%	4%	12%
2	Do you think you prefer this place for the location of the building?	48%	30%	22%
3	Are the newly added buildings noticeable?	72%	10%	18%
4	Is it preferable for you to have areas with more than one concept in the building?	88%	10%	2%
5	DO you think that the volumes separated in the created spatial setup sufficient? (Wet area toilets, sitting areas, open area, closed area balance)	22%	28%	50%
6	Do you think that furniture in use is aesthetic?	56%	30%	14%
7	Is the furniture used in the building sufficiently comfortable for you?	34%	42%	24%
8	Are the lighting elements in the building aesthetic?	86%	14%	0%
9	Is the light balance sufficient for you? (Natural light and artificial light)	60%	30%	10%
10	Is it a place you always prefer? If it's your first time, would you come again?	56%	28%	16%
Ratio to Total Number of Respondents		**60.60%**	**22.60%**	**16.80%**

64% of the respondents were male. 80% of the participants reported their level of education as higher education. The surveys were completed while the users were on site. The survey is given in Table III.

84% of the users noticed that the structure was re-functioned. The location of the building was preferred by 48% of the users due to its proximity to public transportation and being on a busy street. Newly added buildings were noticed by 72% of users with their architectural style. Having more than one concept area in the building was preferred by 88% of the users. The volumes in the spatial setup were reported insufficient by 50% of the users. It was stated by the respondents that especially the wet areas were small compared to the capacity of the place.

56% of the users reported that the furniture used in the building was aesthetic. 42% of the users reported that the furniture used in the building was average in terms of comfort due to the variety of materials. The lighting elements in the building were rated as aesthetic by 86% of the users. The light balance created in the building was sufficient as reported by 60% of the users. 56% of the users responded that they were satisfied with their experience and would come to the place again.

4. DISCUSSION

The fact that most respondents noticed that the place was a re-functioned industrial heritage building is indicative of the success of the application, as transferring the industrial heritage to future generations can be achieved by bringing the structures into urban life with a suitable function, as well as preserving their original identities. (Köksal,2006)

Newly added buildings were noticed by most of users. It can be concluded based on Article 12 and 9 of the International Charter for The Conservation and Restoration of Monuments And Sites (The Venice Charter-1964), i.e., "Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence." and "The process of restoration (…) is to preserve and reveal the aesthetic and historic value of the monument and is based on respect for original material and authentic documents. It must stop at the point where conjecture begins, and in this case moreover any extra work which is indispensable must be distinct from the architectural composition and must bear a contemporary stamp", respectively, that the refunctioning process was a success (Venice Charter, 1964).

The occurrence of more than one concept in the building was reported as a reason for preference by most of the users. It is challenging task in a commercial building to meet diverse needs of the users (drinking coffee, studying, socializing, sitting in the workshop or a quieter section) in a single building and ensuring the satisfaction of the users, which was successfully implemented in the Espressolab Roastery case.
Majority of the respondents reported that the volumes in the spatial setup were insufficient. Given that the project included refunctioning of an industrial heritage building, a comprehensive intervention in the original building was out of question, and therefore, user satisfaction can be improved by setting a limit for the number of customers, who can simultaneously use the building.

Most of the respondents reported that the furniture was aesthetic. XXXXXXXXX The users' experiences shape their aesthetic perception (Jackson, 1998).

Furniture with multiple designs in the building can provide the user with the freedom to choose in terms of visual taste and comfort. The respondents reported that wooden furniture was visually warmer and more intimate. Wooden material use reinforces the user's sense of belonging to nature, encouraging positive ideation. Rice (2006) suggested that wooden furniture creates sincere and simple perception on the side of the users (Özkan, 2009).

As regards the light balance, most of the participants expressed their satisfaction. Some of the respondents reported that the balance of natural and artificial light in the space was inadequate. Nevertheless, given that it was a re-functioning project, it was not possible to intervene in the façades. Most of the respondents thought that light balance was adequate, pointing out that the dim light was relaxing. "One of the most important design elements that give meaning to the interior is the light source. Light is to illuminate the space and give the necessary light to the space in the direction that the users need. Accordingly, the lighting methods used and the different light source colors may create different perceptions for the users in the space. While a cold-colored light source creates a clear, distinct, and simple perception of the space; warm-colored light source creates an attractive, impressive and comfortable perception of the space" (Kır, 2015). In this context, intended perception was successfully created by the project.

5. CONCLUSION

In conclusion, upon review of the study results and responses to the user surveys, the architectural design of Merter Espressolab Roastery was considered successful on the grounds that the original building was re-functioned without damaging its architectural structure and historical texture,

along with certain factors including the location of the place and the compatibility of its new function with the location, the creation of many concepts in the place, the aesthetics and comfort of the furniture used indoors and outdoors, aesthetics of lighting elements, adequacy of light balance, and the likelihood that users would come again.

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NOTE: The images without specified sources were photographed on site by the authors in January 2024.