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Transformation of Historical Buildings into Information Centers

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Abstract

The structural and spatial changes that information centers have undergone have resulted in such structures changing internally and externally. The current building stock generally includes; public library buildings, university library buildings, institution/foundation/individual archive buildings, and various other types of information center (museum, exhibition building, etc.) buildings. However, with the positive effect of the changing information services and the pace of development of information centers, the re-functionalization (evaluation) processes of buildings that are idle in cities, have also started to gain importance. Cultural assets that are idle or used in a non-functional way due to various reasons in cities need to be reintroduced into society. Historical city structures have lost their functionality for various reasons should be restored to more efficient and functional states instead of being abandoned and demolished. They should contribute positively to the texture of that city and all technical-academic services in the city. Based on this philosophy, the study evaluates historical buildings that have been converted into information centers with various elements. In this respect, different building examples have been addressed with detailed analyses. Whether the buildings that have undergone changes are suitable for more functional use with their new design styles, and whether they can provide sustainability, has been evaluated qualitatively with all kinds of architectural language and infrastructure elements. Based on the evaluations made, a guideline has been put forward for information specialists who wish to work on similar processes in the future.

1. Introduction

Since the early ages, people have been acquiring basic worldly knowledge for survival and information important for their lives. Their endless curiosity and search for resources have been among their most prominent pursuits. People's curiosity for learning has brought with it the search for spaces with different concepts where existing records can be developed and preserved, and where information obtained can be recorded, and accessed in various ways. For this purpose, different but functionally similar structures such as archives, libraries and information centers have been built, which have been developed in connection with each other. This structure, which first emerged as temple archives and libraries in the Ancient Age, has begun to expand and diversify into different types of structures such as public libraries, large information-culture centers, and university libraries with the development of universities over time. The fact that people kept their information and its sources in temples for security purposes led to the emergence of temple libraries and the necessity of protecting these structures. Temples have been the best-protected buildings in a city in historical times. Temples were also the areas where people gathered and socialized in their time. “Temple libraries, which consist of user areas, personnel areas, and storage areas for information sources, are structures that facilitate the collection, storage, and sharing of information in their respective periods” [1].

Especially, the library buildings of temples established in the Ancient Age, temple archives and archives kept in government buildings, prevented information sources from being destroyed and damaged. “Although important Ancient Age libraries such as Sippar (Baghdad) Library, Ephesus Celsus Library, Alexandria

Library, Cordoba (Cordoba) Library, and Pergamon (Bergama) Library, which can be considered the most important information centers of their time, especially due to the effects of great wars in ancient times, were destroyed, many works were saved in different parts of the world" [2]. This was achieved with the experienced, careful applications and devoted efforts of information experts, bringing these works to the present day.

In the 21st century, information center spaces began to evolve alongside global changes. Information center buildings have now become more social and people-oriented. "Information centers, which are the main source of effective learning and teaching activities for every individual in every period, are being enhanced by technological equipment, digital materials and resources today" [3]. Along with this rapid development and change in information and communication technologies, information resources are constantly increasing. With this increase, the education of individuals who can easily access the information they are looking for within the existing information science system has started to gain importance [4].

Such positive changes in the establishment and development phase of information center buildings over the centuries, have also altered their architectural features. Buildings are being redesigned in accordance with the innovations brought by the modern age. In addition to storing information, library buildings have become complex structures that combine different functions where people can engage in scientific studies and spend quality time.

The expression "third place" was first used for 21st century library buildings when it was defined by sociologist Ray Oldenburg as a place where individuals can spend quality time in a quality place other than home (first place) and work (second place) - a home away from home [5]. Information centers used for research, study, and document archiving purposes have begun to transform into more complex and functional structures with the contributions of the lifelong learning center concept. Driven by this transformation, information center spaces are becoming more efficient, sustainable, and designed to suit the fast technological flow of the age. In this direction, the idea that historical city structures have lost their functionality for various reasons should be transformed into information centers that can contribute to the texture and services of the city by being made more efficient and functional has been brought to the forefront. Over time, the idea of transforming information centers has begun to be based on more permanent foundations. Re-functioning emphasizes that when restoring historical buildings built in many countries of the world, these buildings should be evaluated not only as works of art but also as historical documents. Repairs made to transfer the original state of a historical building to future generations should include many sources of information such as the spirit of the city and its historical evolution [6]. In the buildings where the spirit of history is kept alive, the construction is continued in accordance with the original function of the building and the characteristics of the historical environment by adhering to the old facade constructions, preserving the details of decoration and decoration [7].

Thanks to the permanent foundation created, cities will be able to develop more fairly, safely, and sustainably, and thus the foundation of a more resilient society will be laid [8]. In this respect, information center buildings will become institutions that serve all segments of society. They will contribute to the development of a more effective society by providing higher quality service.

Spatial transformations can also be carried out in museum buildings, which have a structure similar to information center buildings and hold an important place in the protection of cultural heritage. The main purpose of the transformation is to protect cultural heritage and to provide economic and social benefits for local communities [9]. In addition, risk mitigation measures should be applied in order to prevent the transformation of collections in all kinds of information centers such as museums and damage to cultural heritage [10].

It is important to determine the viability of buildings in cities and the current status of historical buildings. Collecting information about buildings in advance also helps to identify historical buildings that have been neglected and damaged over time. Additionally, it allows for the analysis of their potential to be converted into information centers. Therefore, critical buildings should be carefully monitored and different interventions should be made to their interior and exterior structures when necessary in terms of sustainability [11]. In these interventions, the current content and past history of the structure should not be touched too much and attention should be paid to the original structure.

Structural and technological developments that occur near historical buildings within the urban fabric can inspire aesthetic enhancements to those buildings. In addition, unauthorized alterations that threaten the picturesqueness of the building should be prevented by preparing a monument management plan and conducting appropriate monitoring studies from the very beginning of the study [12]. The proposals of the municipality and/or any official institution on this issue should also be carefully examined and decided.

In this study, historical buildings that have been converted into efficient information centers have been evaluated. In this context, various examples of structures made for different purposes were examined in detail. The suitability of the buildings that have been changed with various additions and removals for more functional use as information centers has been evaluated with their new designs. This evaluation was carried out qualitatively by using different architectural language and infrastructure elements. Based on the evaluations made, a guide has been prepared for the work of information specialists and researchers who want to work on these structures in the future.

2. Purpose and Scope of the Study

Information centers increase the potential of meeting the information needs of the entire society and accessing information because of their functions. The duties of information centers to protect information resources as the memory of society and to transfer them to future generations are always essential. In this context, the aim

of the study is to analyze examples of information centers that have undergone transformation from the world and Turkey, and to create a guide study that addresses the services and applications necessary to ensure greater efficiency is obtained from these places by transforming historical buildings into information centers. The scope of the study is kept wide with examples from various countries worldwide.

3. Methodology of the Study

The study was conducted using an academic literature review, on-site detection, and observation methods. The study was initiated with a descriptive literature review. Previous academic and technical studies on the subject of the study were examined with detailed keywords from various indexes and databases such as Web of Science (WOS), Scopus, TR Index, Tubitak Ulakbim Dergipark, etc. and the necessary literature reviews were conducted. Then, observation and document analysis were performed and the examples discussed were explained with the help of photographs and other documents. The data obtained as a result of the study were analyzed, and the points to be considered in the transformation of historical structures into information centers were addressed. The methodology of the research is to address publicity, public and private spaces, and the practices that provide the transition between these two areas and nourish publicity. The past changes in historical structures are shown by comparing current and old photographs. The study was completed with suggestions on the aspects to be considered today and in the future in the transformation of historical structures.

3.1. Research Problem

The research problem that the study focuses on is to analyze the elements of repurposing library buildings in Turkey, or abroad. The determining criterion in the selection of these buildings is that they were built in past centuries and have a symbolic value in their location. In the spatial organization of 21st century library buildings, it is to determine who the users who will use the spaces and materials required for information technologies are and how important it is to design accordingly.

3.2. Research Questions

Is it possible to make adaptively reused historical buildings functional as efficient information centers? What are the positive returns of transforming adaptively reused historical buildings into efficient information centers?

4. Literature Review

The aim of the literature review is to use a two-part framework to examine learning as based on a limited memory capacity and anxiety's inefficient use of this capacity. In the literature review, articles, reviews, and dissertations related to the subject were examined. Previous studies on the transformation of historical structures into information centers were summarized. According to the results from studies on the reuse of historical structures in national and international literature, transforming information centers yields positive outcomes. In this section, various academic resources were discussed, and publications were organized and interpreted in a manner contributing to the study.

Karim, Harun & Ayob [13], in their study focused on the processes of renovating various old buildings in Malaysia, which are considered antique and cultural heritage, and restoring them to convert them into museums with the efforts of the Malaysian government. Some criteria to be taken into consideration in the restoration processes are; preservation of historical integrity, selection of original structure and materials, a concept suitable for its new function, and evaluation of the feedback received from visitors. As a result of the study, suggestions were put forward for the success of the re-functionalization processes of museums in Malaysia and providing the best service to tourists visiting the country.

Çuhadar [14], in his study, focused on the workflows, service quality, access to information, and the connection between the lifespan of information resources and library buildings in Turkey. He stated that library buildings are undoubtedly affected by developing and changing technologies and argued that adapting to change and equipping libraries with up-to-date technologies will increase the efficiency from sustainability studies. It has been determined that if library buildings are restored in a flexible, aesthetic, accessible, safe, and technologically suitable manner, and if they are economical and adaptable to expansion and change, they will be more conducive to robot and artificial intelligence applications, thereby serving their users better.

In their study, Odabaş and Akkaya [15] sought to determine the effect of spatial change and restructuring in information centers in Turkey on the current architectural understanding. The perspective on aesthetics, beauty, and comfort in information center buildings also directly affects the institutional perspective. Today, the architecture and spatial characteristics of information centers are the most important criteria in terms of the institution's service adequacy, value, social prestige, and general perception. In this way, the study focuses on the benefits of restructuring in information centers. It is suggested that these benefits should be studied in order to be sustainable in the coming years.

Wang [9] emphasized in his study that Wellington Museum should be transformed into a museum with more modern and interactive exhibitions while preserving its original features. After its transformation into a museum, Wellington Museum has become a major source of income by attracting thousands of visitors every year.

In their studies, Ashmawy, Ragheb, Ragheb & Marouf [16] emphasize that changes to the interior and exterior environments of old institutional and individual old office buildings with high energy consumption rates in Egypt and the development of a green building philosophy and restorations will contribute to the

construction of new sustainable buildings. Institutional buildings can be transformed into healthier, more resource-efficient green buildings by promoting sustainability and environmental management. In this study, sustainability indicators and principles that are critical to transforming old office buildings into new green structures are emphasized. In this study, the green building movement is adopted, and practical guidance is provided for architects, politicians, and stakeholders who support sustainable development.

In their study, Kayhan Tunalı & Güneş [17] focus on examples of successful reuse of old historical buildings purchased by the Kadıköy Municipality. Old and adaptable historical buildings in the Kadıköy area were redeveloped in line with these principles and turned into active and functional information center spaces that respond to community needs.

Nnatu, Okechukwu & Jacinta [18] investigate the dynamic relationship between sustainability, diversity, and inclusivity in the context of information centers in the digital age. They put forward various recommendations for old information centers in Anambra State, Nigeria, aimed at better addressing their changing needs through demographic factors and strategic initiatives, and at creating more sustainable environments by ensuring building-staff harmony. Economically, sustainable information centers will also contribute to local economies by providing free access to resources that can develop and support business skills and encourage innovation.

Rashdan & Ashour [19] address the critical gap in the literature on the development and sustainability of interior designs of various historical buildings in the United Arab Emirates. The study emphasizes that micro-scale analyses are quite necessary in interior design, thus gaining new perspectives on sustainable practices. The study is evaluated as a basic guide for determining the contents that can be used in information center buildings, focusing on sustainability in interior design and developing certain actionable standards.

Hoşer & Öztürk [20] focus on the functional restructuring of the Aydın Textile Factory, which is in an idle state, and its adaptation into a new restaurant. The restoration and re-functioning processes were meticulously followed. As a result, this study shows that industrial heritage areas can be successfully integrated into contemporary urban life with effective planning, community participation, and innovative design. As a result of the studies, Aydın province has a new Culture Park and, as a secondary outcome, an information center. The positive evaluation of the industrial heritage of Aydın Textile Factory from the past to the present also contributes to the spatial transformation and revitalization of its surroundings.

In his study, Atmaca [21] emphasizes the necessity of repurposing Shopping Malls (AVM's) which have lost their initial functions and using them as foundation university buildings. These vacant buildings that have lost their functions but remain structurally intact are referred to as Dead AVM's in the architectural literature. This study aims to make investors think about the repurposing of defunct AVM's in the future, in accordance with the public interest. The study shows that dead AVM' s can be converted into university buildings both statically and structurally without the need for major structural revisions, and this transformation is beneficial for the public interest. The project, which is a n exemplary model for new investors and decision-makers, is an important incentive for the re-use of such structures for the public interest.

Özdemir and Arslantekin propose in their studies [22] that information centers should become green information centers in order to provide sustainable services in efficient ways. Information centers, which take the philosophy of greening to the forefront in direct relation to each other, assume important roles in the creation of a good structure and functional areas. In this context, sustainability and green building concepts were discussed in the study, green building certification systems were examined, and the LEED green building certification system was comprehensively evaluated. According to the authors, information centers aren't just a building; they are also sustainable information repositories.

As a result of the literature review, changing the functions of historical buildings and transforming them into information centers is a very appropriate, economical, and efficient approach. Thus, by increasing the number of information centers, more efficiency can be obtained from buildings, contributing to the information society.

5. Re-Functioning of Historical Buildings

Theories and legislation that shaped the concept of protection and functionality developed from the 18th century to the present, while the concept of re-functionalization was first expressed within the scope of Carta Del Restauro. In the declaration published in 1931, the basic discourses in protection were addressed by giving new functions, and it was explained that the necessary adaptations could be made to the buildings that continue to be used without substantial damage [7].

Today, all institutional structures have begun to differentiate both spatially and functionally. In general, in building design, factors such as the purpose of the building, its cultural identity-image, and its tendency to energy efficiency are important, and buildings are constructed in accordance with these factors. Over time with the effect of technological and sociological innovations, the necessity of "re-functionalization" processes has emerged in order to use resources more efficiently in old buildings that may remain idle.

Historical buildings reflect the lifestyles and beliefs of past societies with the sustainability of collective memories. Reconstruction is one of the most widely used methods in movable and immovable cultural heritage [23].

For example, many buildings built or repurposed as libraries since the Ottoman period haven't survived to the present day. However, structures such as Nuruosmaniye Library, which have served as libraries since their establishment, have been repurposed as manuscript libraries today and continue their library function under the Ministry of Culture and Tourism [10].

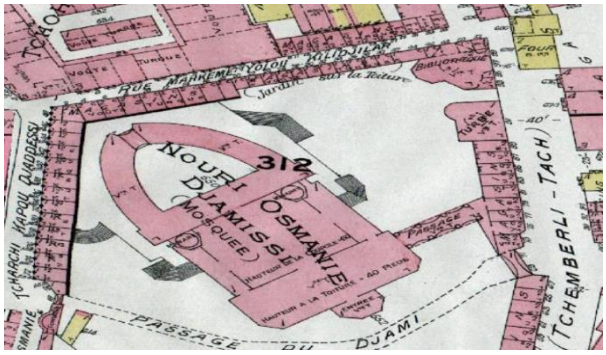

Figure 1. Nuruosmaniye Library on goad maps [24]

Ahunbay [25] defines re-functioning, one of the conservation techniques, in his study as "re-functioning historical buildings that have lost their original functions over time by preserving their structural features with certain principles or updating historical buildings whose functions continue but whose comfort conditions have worn out". As Ahunbay mentioned, buildings that were designed and used to respond to different functions in the past suffer physical and moral damages due to different environmental conditions over time. Re-functioning can be carried out to prevent these damages from increasing. Re-functioning is an important process in preserving a building with cultural value and adapting it to urban life.

In re-functioning processes, the core identity of the building should be respected. In the process of re-functioning, it should be accepted that the form of a building is an important element affecting its new function and sustainability, and their preservation and transfer to the future should align with contemporary requirements [26].

The concept of sustainable buildings was first mentioned in the Brundtland Report. Sustainable buildings are defined as buildings that meet today's needs without compromising the ability to meet the needs of future generations [27].

The creation of a sustainable information center is one of the most important goals that re-functioning studies in information centers aim to achieve. The sustainability of an information center will enable it to make the necessary updates efficiently under all conditions and in all periods. In addition, the rapid change and development of technology bring with it the appreciation of common sustainable areas and urban information centers [28].

Since user demands, in line with the hierarchy based on more comfort, and corporate image, the redesigning of information centers can come to the fore. It is accepted from the outset that "the importance of the location, collection and digital networks of the buildings, the actions to be carried out in the building, socialization opportunities, individual and group environments, silent and audible space options, ease of use, and the quality of the space design" [29] contribute to re-functioning.

Re-functioning is based on the understanding that involves changing the interior and exterior structure of an information center in a way that will provide more efficiency. For this purpose, maximum benefit is obtained from the information center, and minimal resource expenditure is prioritized. This situation also emphasizes the importance of sustainable information centers. The understanding of obtaining a higher level of benefit from information centers entails not only improving the interior design of the building, changing wall paints, making decorations, adding new shelves, etc., but also prioritizing the design of buildings where users can spend long periods of time comfortably, meet all kinds of human needs (information, toilet, nutrition, etc.) quickly and easily, and benefit from the internet and social media tools more comprehensively and for 24/7 access.

Information center buildings must be able to both meet the information needs of users and to support their daily lives. It is important in terms of usage intensity that people of all ages and ability levels who vary both psychologically and physically, can move more easily and freely within the space. Therefore, the criteria of the circulation created, the organization of space, functional selatinse, and the layout of interior-exterior spaces interacting with each other, come to the fore in architectural plans [30]. As Topatan mentioned, the direct benefits of the structural change of information centers and the re-functionalization of spaces are that buildings that were previously idle can now serve a more sacred purpose and buildings that were not very useful in terms of content can be made more functional. This benefit is both culturally spiritual and materially important in terms of sustainability. The development of sustainable buildings contributes positively to the well-being of the building ecosystem in general.

The development of smart buildings is important in terms of sustainability. The developments from information and communication technologies in smart buildings enable well-functioning building management systems. Especially for energy generation, the main natural resources such as sun, geothermal resources, and wind are used efficiently. Movement, heat, light and other sensors for controlling energy consumption, regenerative elevators, efficient energy storage units, economical armatures, facade and plan designs to reduce energy loss, appropriate material and construction technique selections are the most common of these methods" [31]. In this context, the aim is to adopt and continue the concept of a spatial order that prioritizes not only technical but also human and technological factors creating and developing the architectural designs of today's information centers. For these reasons, the subject of "Refunctioning in Information Centers" is discussed in detail in the study.

6. Re-Functioning in Information Centers

In order for information centers to fulfill their functions correctly and efficiently, they need to be rearranged according to different elements periodically and undergo renovation and restoration processes in accordance with various technical specifications. The structure of the buildings was designed to fulfill a certain function in the past, and after the re-functioning process, this function will inevitably be replaced by new building concepts and designs. Thus, the buildings will have interior and exterior conditions suitable for their new purposes. The transformation of historical buildings into

information centers within certain plans allows both the protection of cultural heritage and the reuse of resources with modern functions.

Before proceeding to the restructuring process in the information center, the existing situation must be evaluated and the deficiencies must be addressed. Repurposing an information center whose infrastructure is incomplete is like paving asphalt on a road whose infrastructure is unprepared; both are inefficient undertakings. The information center management must first perform a situation analysis and evaluation. The most important way to achieve a successful restoration is to create a specific strategy and follow it. The service standards that the information center can provide in the future should also be determined [32].

It is important to repurpose historical structures in order to reflect the identity of the cities with their rich architectural details and cultural connotations. Cultural heritage can be transferred to future generations through adaptive reuse.

Re-functioning is seen as an important tool to save historical structures from demolition. "In addition, according to Article 5 of the Venice Charter, 'The preservation of monuments by using them for any useful social purpose may be encouraged.' Therefore, such use is desirable; but the original plan of the structure should not be changed. However, the possibility to allow and design the changes brought about by the new function within these limits is discussed [33].

In order to fulfill all these goals, the functioning processes of information centers can be performed according to the following elements:

6.1. Preliminary Assessment

The structural strength and usage potential of the building are analyzed historically and prospectively.

6.2. Developing the Main Building Plan

The second step in the process of re-functioning a historical building is to develop a master plan that summarizes the general goals of the project. At this point, clear project goals need to be determined. Priorities in the project and possible later applications should be clearly and detailed explained. Problems such as outdated building systems and hidden damage should be categorized, and solutions should be planned. This categorization helps to achieve the main project goals, by balancing the areas that may be problematic.

6.3. Determination of the Interior-Exterior Structure of the Information Center

The future usage conditions of the information center are evaluated first. In accordance with the evaluated conditions, the options of renovating the building and/or demolishing and rebuilding should be considered. In accordance with these options, a detailed land survey can be conducted again, and environmental conditions can be examined. For example, there may be elevation differences between the interior spaces of the building and neighboring buildings. Such situations should be re-evaluated. Parking lots, pergolas, and benches for resting can be built in accordance with the future usage preferences and structure of the building. Changes can be made to the land for easier parking and circulation of electronic vehicles. If necessary, different additions such as a ramp or underground garage can be made to the land.

6.4. Circulation

The determination of the occupancy-vacancy rates of information center buildings and the analysis of how much and for what purposes the buildings are used during the day involve detailed data collection. Circulation areas are directly related to the exhibition, announcement of works, and the determination of the conditions under which users can perform other personal actions. Comfort conditions, the image of the information center, scientific pleasure, and a noisy-quiet environment are elements related to circulation [28]. In information centers where circulation can be established under the necessary conditions and sustainability is ensured, information services can have a long life.

6.5. Sustainability

The process of transforming a historical building to be used as a more efficient information center requires extensive planning, structural sensitivity to preserve important areas of the building, and good judgement to harmonize the old with the new. The main goal here is to ensure that a building can be used continuously for hundreds of years, not just 5-10 years. Establishing a sustainable information center is beneficial to the public interest both materially and spiritually. Re-functioning an existing building with a different concept requires fewer environmental costs than constructing a new one. This transformation is also important in terms of reusing building materials and energy efficiency. Researchers in a sustainable building can find greater inspiration from this environment. Thus, the benefits from that information center and its development activities can also increase. The principles that a sustainable building should carry are summarized below:

*The entire interior-exterior system of the information center should be connected as a whole.

*The information center should have thermal systems that manage heat levels effectively to prevent overheating while allowing it to benefit from direct sunlight.

*For the information center to become a green building, green roofs and open-air elements should be used. Thus, users can enjoy the surrounding view while working or resting. In addition, this feature can help protect cooler building areas during the day by absorbing excess heat.

6.6. Protection of Cultural Heritage

The protection of historical buildings is important for transferring the architectural and artistic values of the past to future generations. Information centers directly contribute to the preservation of these buildings without

deterioration, and to their continuous use. The conversion of historical buildings into information centers can create tourist attraction and contribute to the local economy economically and culturally. The protection of historical buildings and their conversion into information centers can also provide a model of mobility and re-functioning to other information centers in the vicinity, and indirectly to the service sector.

Historical buildings converted into information centers can become a part of modern life while at the same time ensuring that the connection with the past is not broken. For example, many historical monasteries, castles, and industrial buildings in Europe are used as information centers or cultural centers today. In addition, many different structures have the potential to be converted into information centers. In Turkey, some inns, madrasahs and old public buildings serve as libraries or museums. The conversion of historical buildings into information centers ensures that these structures are left as a legacy to future generations. In terms of protecting cultural heritage, the transformation of information centers can be considered an important activity. Any kind of application regarding the protection of cultural heritage is important for conveying information sources to future generations.

In addition, the repurposing of old historical structures in the protection of cultural heritage has the potential to contribute greatly to the development of international cooperation. In the international arena, organizations such as UNESCO make different agreements for the protection of cultural heritage and provide material and moral support to the organizations of countries in order to protect cultural heritage areas around the world. Many countries receive assistance from organizations such as UNESCO for the protection of cultural heritage, and they also make legal arrangements in order to protect cultural heritage elements. These arrangements are very important ensuring the protection of cultural heritage both locally and internationally.

One of the most important pillars of the protection of cultural heritage products is contributing to the social and economic development of a country through various activities, including tourism, economy, education, culture As a result, the purpose of the protection of cultural heritage products is not only the protection of objects. At the same time, the goal is to keep this heritage alive, to share it, and to contain the potential to pass it on to future generations.

7. Examples of Re-Functionalized Local-Foreign Information Center Buildings

Information centers such as libraries and museums are restored and repurposed to serve new purposes. Examples of old buildings that have been put back into service as information centers with a sustainable approach are given below:

7.1. Niğde Kale 100th Year Public Library Example

The historical structure, which has been used as the Yahya Prophet Church since 1861 in the Eski Saray Neighborhood of Niğde province, has started to serve as an information center as Niğde Kale 100th Year Public Library as of November 7, 2023. This transition comes after restoration and conservation works. The emergence of this development and the implementation of the application constitute an important foundation of the joint work carried out between the Ministry of Culture and Tourism of the Republic of Turkey and the Niğde Municipality. With this development, the number of public libraries and information centers in general, in Niğde province has increased, and the demands of university students who want to benefit from these modern information centers have been met. In addition, because the university campus is outside the city center—on the road to Bor district—, some negative experiences of students who want to use the information centers have been prevented to some extent.

Regarding the new status of the information center, Niğde Mayor Emrah Özdemir stated, "We have made an intensive effort to put this information center, which was re-functioned and brought to our city, into the service of our people. We are pleased to provide such a service in the 100th year of our Republic. On this occasion, we would like to thank our Minister of Culture and Tourism Mehmet Nuri Ersoy once again for his support and contributions to our efforts to protect our cultural heritage. The library will make an important contribution to the cultural and literary activities in the city [34]. With the information center taking such a positive shape, university students and all citizens will be able to use the library to gain the habit of reading books, conduct research, and participate in future cultural events to a greater extent.

Figure 2. Niğde Kale 100th year Public Library

7.2. Muş Bulanık District Public Library Example

A stone building used as a prison for 49 years in the Bulanık district of Muş has been transformed into a public library with a conversion project. The building, which has been restored to its original state, serves as a cultural center with a capacity of 100 people [35].

With the new building concept, the prison, which used to be the dark side of the district, has been transformed into a more social area, and this new information center has become a beautiful public building meeting the informational needs of the local people.

Figure 3. Muş Bulanık District Public Library

7.3. Rami Library (Istanbul) Example

The Rami Library, restored from the Rami Barracks of the Ottoman Empire period, was opened on January 13, 2023, featuring a 51-thousand-square-meter landscape area within a 220-acre site, with the participation of President Recep Tayyip Erdoğan and Minister of Culture and Tourism Mehmet Nuri Ersoy.

In his speech at the opening ceremony, President Erdoğan said, "The Rami Barracks, which was converted into a library, has a very important place in the country's history of the last 2.5 centuries. Sultan Mahmud II directed the Ottoman-Russian War in 1828-1829 from this building. The barracks, which were used for the same purpose for a long time during the Republic period, has been transformed into a very large information center with our discretion [36].

Figure 4. Rami Library, President Rami Library Opening 2024 [37]

7.4. Example of Sant Sadurní d'Anoia Cultural Center and Archive Library (Spain)

The Sant Sadurní d'Anoia Cultural Center and Archive Library was created by repurposing a historical building that was formerly used as a school . Without touching the foundation of the historical building, a new U-shaped annex was built in accordance with the classical school typology widely used in Spain, [38]. The repurposed building has become an important cultural center of the country.

Figure 5. Sant Sadurní d'Anoia Cultural Center and Archive Library 2024 [39]

7.5. Utopia, Performing Arts Library and Academy (Belgium) Example

The Utopia Performing Arts Library and Academy in Belgium was built on the foundation of a military school called Utopia. The academy was built with the aim of being a symbol and cultural center for the city of Aalst. In its new form, the building is used both as a city library and an art academy [40].

Figure 6. Utopia, Performing Arts Library and Academy 2024 [40]

7.6. The Library Stanbridge Mill (England) Example

Stanbridge Mill Library in Dorset, which was used as a barn and farm storage in the past, has been transformed by England Crawshaw Architects into a modern library containing a special book collection. The proportions and content format of the old farm building have been preserved in the new concept. The building project was awarded at the 2021 AJ Architecture Awards [41]. This is a very illustrative example of how even a building that used to be a barn can be transformed into a modern information center.

Figure 7. The Library Stanbridge Mill 2024 [41]

When various examples of re-functioned local and foreign information center structures are examined and analyzed, it can be seen that re-functioned buildings are generally more modern and functional structures. In addition, repurposed buildings can be expected to comply with certain international standards in order to gain a greater place in the international arena. "For this purpose, the Republic of Turkey accepted and implemented the ICOMOS Traditional Architectural Heritage Charter in Mexico in 1999 as additional principles to those in the Venice Charter, on the grounds that architectural heritage provides a universal cultural diversity and that its protection imposes a responsibility at the international level. In this context, the ICOMOS Turkey Architectural Heritage Protection Declaration was published in 2013. In the declaration, it was accepted that the interventions deemed necessary for the use of cultural assets with a new function would be implemented within the scope of the restoration/protection project" [42, 43].

In parallel with the examples mentioned above, the protection measures in repurposed structures should not be ignored. When the pre-restoration condition of the İş Bankası Museum Building is examined, it carries many health and safety risks. However, especially in protected historical buildings, the selection of an installation system to mitigate fire risk caused by natural disasters and/or human behavior requires the most appropriate decision to be taken within the engineering discipline. It can be hypothesized that there will be no water fire extinguishing installation. Because the cultural and information center buildings are open to many people, high losses of life and property could occur if the necessary precautions are not taken and a potential emergency or disaster is encountered. In addition, when the long working hours of the cultural and information centers are taken into account, the risk factors become even more pronounced [44].

In addition, it is known that the risks in information centers affect many sectors, from occupational health and safety, psychological stress and ergonomics, poor indoor air quality to the suitability of workplaces and personal safety measures. The practices and principles to be implemented in this process will contribute to the ability of information professionals and information centers to have a healthier and safer environment [45]. In addition, it will be a priority for information professionals to take measures to protect information centers from external factors.

8. Conclusion and Recommendations

Historical structures should be repurposed, protected, and transferred to future generations, provided that their authenticity is preserved. To make the conservation of historical structures sustainable by integrating them into our daily lives, the intervention should meet the needs of new users and the new function. This sustainability should be ensured without destroying the values carried by the historical structure. Methods of analysis should be used in evaluating the suitability of a historical structure for re-use. When repurposing historical structures and their surroundings, imitation designs should be avoided. It is necessary to keep these historical facts alive with designs made in accordance with the purpose of the renovated building. If they are not used in their current state, re-functioning historical structures that can be protected with many internationally accepted methods, and opening them to public use, is both in the public interest and of utmost importance for the development of regional culture. Adaptive re-use is a contemporary architectural concept that involves modernizing old buildings and infrastructure for a new life. In addition to preserving historical and architectural significance, adaptive re-use benefits cost effectiveness and energy efficiency. It can also help limit problematic urban sprawl. The study of building sustainable knowledge centers by embracing diversity and inclusion in the digital age shows that demographic factors have a significant impact on the effectiveness of both sustainable practices and diversity development strategies. Sustainable knowledge centers are practically essential in the digital age for constructing stronger buildings, supporting greater inclusion. Knowledge centers can increase their sustainability by recognizing and leveraging the diverse talents and perspectives in their communities, ensuring that they remain relevant and resilient in a rapidly evolving digital environment. Future research should continue to explore the dynamic interactions between demographic factors and strategic initiatives and provide more insights to guide effective policies and practices.

Societies are strong to the extent that they can protect their cultural heritage. A society that does not protect its past should not be expected to protect its future. The way for states to embrace their unique culture is to make the historical past more functional by and to establish a balance between past and present. Embracing the past culture requires embracing the structures of that day. In this context, activities are carried out to re-functionalize structures that have suffered partial structural deterioration and almost completely lost their functions in order to add value to their use and to integrate them into social life so that they can continue their existence. Within the scope of this study, it was emphasized that buildings of different sizes and purposes, that have lost their original structural features, are idle, are sometimes carelessly protected, are just kept locked, or do not serve any purpose, can be put back into use and re-functionalized as information centers. People are sometimes even afraid to approach them.

As a result of the analyses, a systematic evaluation of the re-functionalization suggestions was made and the selection criteria were determined based on these suggestions. The desire to store information safely throughout history necessitated the use of religious and administrative units from different periods, such as temples, monasteries, and palaces, as storage areas. During the imperial period, information was shared with all segments of society without discrimination. However, it later became a privatized practice, accessible only to scientists and students, and the security of the space was ensured by chaining the collections to the walls. The search at the end of the 20th century for areas where

research, learning, and sharing could occur comfortably and with high quality led to the transformation of the library building into a multifunctional space by the 21st century. Library buildings, defined as learning centers in the 21st century, have become places where knowledge is created through experimentation, observation, and research, beyond being places where knowledge is learned. Library buildings, which were generally used to benefit individually only from existing knowledge until the 21st century, now constitute a social space where knowledge is produced, allowing for individual or group work and interpersonal interactions. The design of 21st-century library buildings places the user at the center. When user-centered spaces are considered in the context of the immediate environment—space usage-activities, socialization, comfort, and aesthetic elements that provide input to the design of library buildings—, the qualities of the design differ. The characteristics of a library building differ depending on the environment in which it is located.

The relationship plays an important role in both society and access to information, affecting information's architectural design. The use of equipment and collections suitable for the digital age in a quality activity set enhances the quality of the spaces. The necessary infrastructure has been created so users can carry out the activity they want in the library building at any time and place of their choosing. For this reason, the ability to direct users who are different in both a physical and psychological sense has come to the fore in the spatial organization of 21st century, library buildings. In this study, it has been observed that the spatial organization of 21st century library buildings built with a user-centered design approach is a consistent feature of such buildings. Depending on the context and the existing technological-digital equipment, the variety of technological-digital materials in different forms has allowed the formation of various functions in the spatial organization. Additionally, attractive, symbolic designs have been made in both interior and exterior spaces. In order for library buildings to continue to exist, they need to keep up with technological developments and digitalization; increase the spaces that will support workshop activities and make them visible from the outside; adopt innovative design approaches, and present the identity of the building in a contemporary sense.

The transformation of historical buildings into information centers and the general development of information centers will contribute to the formation and use of urban interfaces at the border of public and private spaces by bringing information and culture to the forefront. With the contribution of the information centers built as smart buildings, the future of humanity will develop stronger and the speed of technological progress will increase. In addition, local governments and various public institutions can offer grant programs or low-interest loan facilities for the repair and transformation processes of historical structures. If it is accepted to convert historical buildings under private ownership into information centers, tax exemption or discount may be provided to property owners. By developing joint projects with investors in accordance with legal procedures, the financing burden can be alleviated with public support. The necessary plan changes and usage permits can be provided quickly and with priority in order for the historical buildings to be used as an information center. Technical consultancy and guidance services can be provided by municipalities during the licensing processes for buildings. In this regard, functional transformation can be achieved without disturbing the original structure of the historical building with expert teams in the field. Technical support can be provided for the concept, interior design and functionality of the information center. Events such as training, seminars, exhibitions can be organized by the municipality for the buildings converted into information centers. These centers can be made more visible by integrating them into urban tourism routes. Joint projects can be developed with NGO's to strengthen the connection of historical structures with society. Digital archive systems can be established for the dissemination of information to a wider audience. Information centers can be included in local governments smart city projects.

The process of re-functioning of historical buildings into information centers is a complex but multi-layered process that provides benefits. An evaluation scheme can be put forward for this transformation to be successful.

Table 1. Evaluation Plan for the Transformation of Historical Structures

Category	Best Practice Criteria
Cultural Harmony	The historical and architectural character of the building is preserved and integrated into the new function
Participation	The active participation of local people, NGO's and experts in the process is ensured
Environmental Sustainability	Energy efficiency, natural lighting and the use of recycled materials are preferred
Accessibility	It is made accessible to all users, including people with disabilities
Education and Digitalization	Access to information is facilitated with digital archives, online catalogs and multi-purpose halls
Multifunctionality	The building should be not only an information center, but also host cultural and social events

As can be seen in Table 1, "protection" should be a priority when making restoration and design decisions; new functions should be integrated in a way that does not disrupt the spirit of the structure. Transformation should be seen as a social process, not just a technical transformation. Historical buildings are usually long-lasting and durable, but they should be supported by energy efficiency and environmentally friendly solutions in accordance with modern standards. The goal of information centers should be to facilitate access to information. In particular, the possibility of remote access will enable it to exceed the physical boundaries of the space. These criteria allow not only physical

transformation, but also historical structures to come to life again with social, cultural, environmental and technological dimensions. Best practices emerge and succeed in projects that adopt this multi-layered approach.

As a result, these incentive proposals will ensure that historical structures are both protected and re-function as areas useful to society. It will also make an important contribution to the strengthening of local identity and cultural sustainability.

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Author contributions

Yasin Şeşen: Conceptualization, Methodology, Field study, Discussions, Writing-Reviewing and Editing.
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Conflicts of interest

The authors declare no conflicts of interest.

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