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The Evaluation of Local Commercial Typologies Based On Adaptive Reuse Models: (Tabriz Bazaar)

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Abstract

The modernization of Islamic countries has brought significant changes to heritage buildings, particularly in construction and architecture. The Bazaar, as one of the most important heritage buildings, has played a crucial role in shaping people's identity, culture, and political, economic, and social characteristics. However, the development of new trade centers and the city's expansion after the Industrial Revolution caused a shift in the Bazaar's functions, resulting in its loss of values and social roles in the lives of new generations. To preserve heritage buildings for future generations, cultural sustainability approaches have been considered, and adaptive reuse models are being used worldwide. This study focuses on historical typology in Tabriz, Iran, and uses adaptive reuse models (ARMs) to evaluate the Tabriz Ground Bazaar based on cultural sustainability. The study aims to achieve the potential of rehabilitation by utilizing the SWOT analysis. The selection of Tabriz Ground Bazaar as the case study was based on the quantitative research methodology.

Keywords: *Rehabilitation, Tabriz Bazaar, adaptive reuse model (ARM), commercial typology, sustainability.*

Yerel Ticari Tipolojilerin Uyarlanabilir Yeniden Kullanım Modellerine Dayalı Değerlendirilmesi: (Tebriz Çarşısı)

Öz

Modernleşmenin gelişiminden bu yana, İslam ülkeleri miras niteliğinde olan yapılarında önemli değişiklikler yaşamıştır. En önemli kültür yapılarından biri olan Çarşı, insanların kimliğini şekillendirmiş ve sosyal, kültürel, ekonomik ve politik bir rol oynamıştır. Sonuç olarak, modernleşmeye bağlı olarak şehrin genişlemesi ve yeni ticaret merkezlerinin artması sonucu, Çarşı'nın önemli işlevlerinin dağılımını etkilemiş, değerlerinin ve yeni nesillerin hayatındaki sosyal rollerinin azalmasına neden olmuştur. Miras yapılarının gelecek nesillere hizmet edecek şekilde sürdürülebilirliği, kültürel sürdürülebilirlik yaklaşımı olarak dünya çapında uyarlanabilir; yeniden kullanım modelleri kullanılarak sağlanabilir. Bu çalışma, rehabilitasyon potansiyeline ulaşmak için kültürel sürdürülebilirlik ve uyarlanabilir düşüncesinden hareketle, yeniden kullanım modellerine dayalı olarak Tebriz Çarşısı'nı değerlendirmek için SWOT analizini kullanılmaktadır. Gömülü teori, İran'ın Tebriz kentinde tarihsel tipolojiye odaklanan ARM'leri (uyarlanabilir yeniden kullanım modelleri) seçmek için nitel bir araştırma yöntemi olarak kullanıldı. Nicel araştırma yöntemi temel alınarak, ARM araştırma yöntemi ile değerlendirilmek üzere durum çalışması olarak Tebriz Ground Bazaar seçilmiştir.

Anahtar kelimeler: *Rehabilitasyon, Tebriz Çarşısı, uyarlanabilir yeniden kullanım modeli (ARM), ticari tipoloji, sürdürülebilirlik.*

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1. Introduction

Numerous events such as earthquakes, expanding roads, global climate changes, land value increases, and modernization have led to damage to many buildings. These events pose risks to the cultural and identity patterns of marginal, ethnic, and national cultures. Iran is one of the developing countries affected by modernization, which has caused rapid change in all community areas. Despite having struggled with countless problems and disputes for thousands of years, Tabriz Bazaar remains one of Iran's most important identities and safeguards. It plays a protective role in the social and cultural field. To ensure the durability of valuable historical buildings, attention should be paid to the sustainability of the building. Regional planning, urban planning design, architecture, preservation, and management of cultural heritage are the main fields of planning and design. These disciplines are responsible for the sustainable development of cultural heritage while taking into account environmental, social, economic, and cultural issues. Adaptive reuse has emerged as a key strategy in the conservation of heritage buildings, transforming them to meet new needs while retaining their historical significance. This approach aligns with sustainable development goals by promoting the reuse of existing structures, thereby reducing the need for new materials and minimizing environmental impact (Plevoets & Cleempoel, 2011). The adaptive reuse of historic buildings encompasses renovation, development, and modernization, reflecting the changing needs of communities while preserving historical, social, and aesthetic contributions. Modernization and new products have greatly affected people's lifestyles. However, many modern cities in Iran have suffered from chaos in architecture and urban planning. The mindless imitation and transformation of Western urban development and architecture, without considering their methods, has led to the destruction and forgetting of some historical symbols and images that are important to the urban identity. Iranian cities have deep traditions and urban patterns associated with these traditions. Bazaars, as one of the urban fabrics, have a strong identity and historical cities have started to become more active since the 1960s. Over time, some bazaars were demolished, some became disused historical monuments, and some continued to exist despite the changes. Unfortunately, some old bazaars have lost their sense of self-worth and are now abandoned places within the city. Therefore, it is necessary to evaluate whether a bazaar has the potential to provide new functions and rehabilitate it accordingly. To achieve this, the "Adaptive Reuse Model (ARM)" evaluation framework was designed to assess the market's potential for rehabilitation based on the working gap. This framework involves analyzing the strengths, weaknesses, opportunities, and threats (SWOT) associated with the building, providing a comprehensive understanding of its potential for adaptive reuse (Bullen & Love, 2011).

This study aims to identify the strengths and weaknesses of the Tabriz Bazaar, an important heritage site located on the trade route, in terms of its cultural and identity factors. The study uses the method of reuse models to accomplish its goal. The Tabriz Bazaar has been a meeting point for Western and Eastern cultures since ancient times, making Tabriz a multicultural city. Moreover, this city is one of the legacy architectural cities of ancient urbanization. The qualitative method used in this study focuses on the impact of modernity on the traditional trade center, particularly the Tabriz Bazaar, which forms the urban formation of the city, and the transformation of the architectural style and functions of the trade centers. In addition, the study considers the development of Tabriz's planning system and cultural and value changes as dependent variables. The Australian Burra Charter ICOMOS in 2013 and in the ICOMOS (1964), Venice Charter provides guidelines for assessing and monitoring alterations and additions to heritage buildings (ICOMOS, 2013).

These charters emphasize the importance of retaining cultural significance while adapting buildings for contemporary use. The study proposes that heritage buildings with unique cultural significance and vital communities should be protected and preserved to strengthen the four dimensions of sustainable development, including environmental sustainability, inclusive social development, inclusive economic development, and cultural vitality. Therefore, the study aims to evaluate the cultural sustainability potentials of Tabriz Bazaar based on worldwide certification systems known as adaptive reuse models (ARM). The study integrates environmental and cultural sustainability to gain important knowledge on managing and preserving historic structures for future generations. The study concludes that ARM is the most advanced way to evaluate historical structures in terms of cultural sustainability.

1.1. Definition of Cultural Heritage (Tabriz Grand Bazaar)

Cultural heritage is a reflection of the lifestyles that have shaped communities over time, and that are passed down from one generation to the next with their useful habits (ICOMOS, 2000). An inherent characteristic of cultural heritage is that attention must be paid to the protection of immovable heritage, such as the preservation or restoration of architectural sites. Views on architectural and historical value, as well as conservation theory regarding heritage, differ between East Asia and the West; as a result, various approaches to heritage conservation have been developed according to each culture. In architectural heritage studies, the overlap between renovation and conservation, and more specifically, authenticity in conservation, is a fundamental issue that needs to be taken into account (Poulios, 2011; Weiler & Gutschow, 2016; Zhang et al., 2022).

Preserving heritage involves building a memory that helps us express our cultural identity and fosters in people a sense of continuity and belonging, a greater appreciation for human creativity and cultural diversity. The cultural diversity in each city's built environment is what attracts and appeals to tourists through its unique architecture, historic sites and buildings, parks, shopping districts, and cultural impressions gathered in the streets and tourist buildings (Ashworth & Tunbridge, 1990; Law, 1993; Ryu & Kwon, 2021). Foster stated that the development, strengthening, and rehabilitation of HB, one of the conservation landmarks, is an adaptive reuse of cultural heritage that reveals changing community needs. A wide range of sustainable development is illuminated, taking into account conservation, local needs, and enhancing the value of built heritage. The contribution of cultural heritage to the well-being of citizens and sustainable development should also be stated in the protection and conservation of cultural heritage assets based on the European Union (2020), Foster (2020), as well as in cultural heritage strategies. Despite the extensive research on the preservation and protection of cultural heritage, the market, which is the main core of the formation of the city, has encountered weaknesses and gaps such as technological aspects, transformability, value after adaptation, identification, flexibility, energy degree, legal and environmental quality. These are all elements that will contribute to sustainable development. The bazaar has been a kind of expression of unity, integrity, solidarity, perseverance, indivisibility, and sincerity from ancient times to the present day. The bazaar has a catchy spirit that comes from people's emotions and behavior. Thus, emotion manifests through the soul, and the soul introduces and defines environments and places through experience. Many people, from one civilization to another, from one generation to the next, have achieved identity and human, material, and spiritual gains for themselves with the existence and identity characteristics in the market, through identity elements. As a result, the bazaar and its identity evolved and changed over time. Throughout history, the formation of bazaars and the nature of their customers have changed through communication and connection with other nations, their cultures, and beliefs.

1.2. Chronology Plan of Tabriz Market and its Impact on Modernization

Tabriz is a city located in the northwest of Iran, and it is the most populous city as well as the capital of East Azerbaijan province. Tabriz is known for being a popular destination for handicrafts. The "World Handicrafts Council" has even recognized Tabriz as the "World Carpet Weaving City." Due to its historical significance, many people visit Tabriz every year. The city is situated at an altitude of 1351.4 m (4433.7 ft) above sea level and is surrounded by the Gul River, Bitter Stream (river), Lake Urmia, Sehend Volcanic Mountain, and Einali Mountain. The history of this city dates back to 1500 BC. Tabriz is located in the heart of the large and fertile province of Azerbaijan and guards one of the gates of Iran. Tabriz, which served as a significant military base in the 9th century, developed into an economic and commercial hub during the same period. By the 12th and 13th centuries, it had become the capital of the country. Due to its prime location on the Silk Road, Tabriz reached the pinnacle of its social and economic prosperity between 1316 and 1331. The city's strategic position on the popular West-East and Southeast-East trading routes allowed it to produce highly valuable industrial products such as silk, cotton, equipment, and pottery. Investors were encouraged to invest in the city as it was exempt from taxes. As a result, the Safavids chose Tabriz as their kingdom's capital in the early 16th century, transforming it into a powerful administrative center. However, the city experienced economic depression in the last quarter of the 17th century and political instability as a result of Ottoman

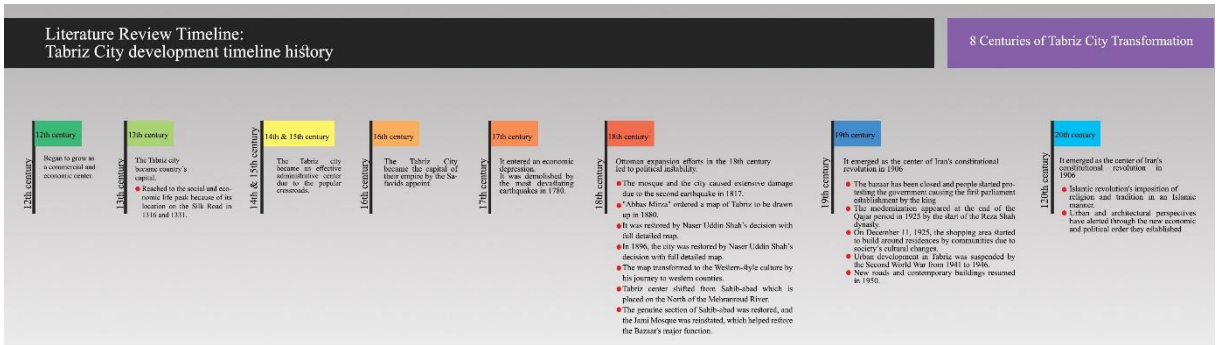
expansion efforts in the 18th century. Unfortunately, Tabriz was hit by several devastating earthquakes between the mid-17th century and the mid-18th century, with the most severe one occurring in 1780, during the Qajar dynasty's early years. Despite the destruction, the city was immediately rebuilt and continued its life. However, another earthquake in 1817 damaged the important historical mosque and a significant portion of the city. In 1880, Prince Abbas Mirza commissioned a detailed map of Tabriz, including its neighborhoods and elements. Although the city was restored, Naser Uddin Shah decided to change some of the city's views after visiting the West in 1896 and being influenced by it. Upon his return to Iran, he changed some construction methods and building facades based on Western culture.

However, architects and art students of that time lacked sufficient knowledge of Western architecture and culture to design buildings based on Western models. The city underwent several transformations in the 19th century, with public buildings and life's focal point organized around a large square north of the Mehranroud River, moving from Sahib-abad to its current location near Ali-Kapu, south of the river. The Sahib-ul-Amr square is located below the authentic area of Sahib-abad. The reconstruction of the Juma Mosque has helped restore the central role of the Bazaar (UNESCO, 2009a).

Tabriz, a city in Iran, emerged as the epicenter of Iran's constitutional revolution in 1906. After the Qajar period in 1925, Reza Shah changed everything in a modern way. The city did not have the opportunity to maintain traditional life and continue its experiences after modernization came to the city. As a result, some of the upper and middle classes of society have changed their residences and allowed communities to shop in the environment where they reside (Mazaheri, 2006). On December 11, 1925, the parliament handed over the government of Iran to King Reza Pahlavi, and Tabriz, like the rest of the city, now adapted to a modern urban system. During the Second World War, from 1941 to 1946, urban construction stopped in Tabriz, as in other cities. New roads were built again in 1950, (UNESCO, 2009b).

The Islamic revolution in Iran in 1979 had different effects at the end of the 19th century and the beginning of the 20th century. As a result of the ideological consequences of the Islamic revolution, Iran subjected its religious and Islamic tradition to the imposition of its architectural field. Therefore, an architectural style similar to chaos was experienced. The Iranian revolution resulted in the collapse of traditional society. Their urban and architectural perspectives were changed with the new economic and political order they established. All cities in Iran, especially Tabriz, were affected by the modernization transformation. According to the statement mentioned above, the urban formation of Tabriz Bazaar has developed with new elements such as streets, settlements, roads, and functional buildings in different historical periods. This transformation and development began to manifest itself with increasing hectares and urbanization from the 8th, 11th, 13th, and 19th centuries until the Islamic Revolution (Table 1). As a result of the transition from tradition to modernity, a comprehensive urban transformation took place in the city center of Tabriz. The area around the Friday Mosque, known as Tabriz city center, has lost its valuable historical texture as a result of this transformation (Figure 1).

Table 1. Tabriz city development timeline history



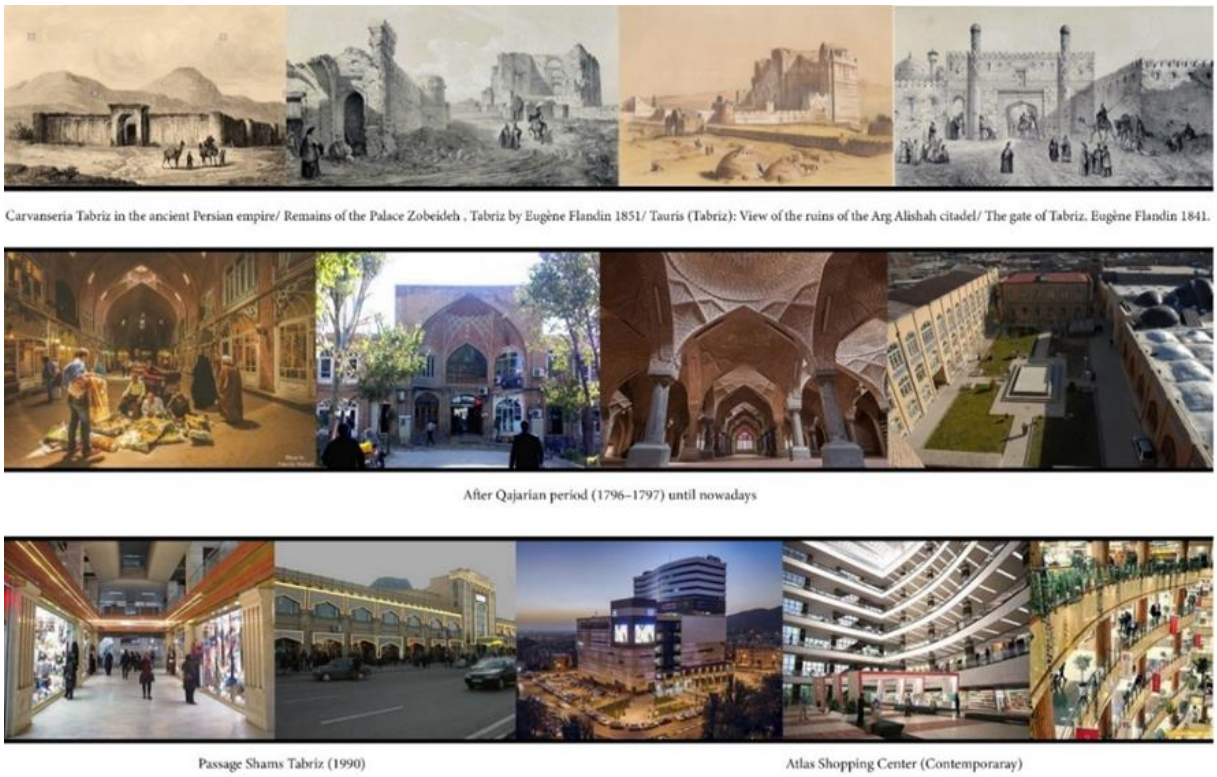


Figure 1. Periodic Changes in the Trade Center (Golkarian, 2021a).

In Tabriz, the city center's spatial structure has become a significant economic hub for worship and pilgrimage services. A major Tabriz city center reconstruction project was initiated in 2006, with a focus on this planning (Tash, 2006). According to the project, the areas surrounding Cuma Mosque and Erk Castle were isolated with green belts, while the rest of the old city was renovated into modern shopping malls, residential towers, and hotels. However, this urban planning approach caused harm to the city's histology and anthropology, which tarnished the identity of the bazaar structure. The bazaar is a space that replaces "historical" architecture in strategically placed artificial contexts that are purified from the visual pollution of modernity, filtered by time but isolated, and visited by the general public (Deriu et al., 2016). The concept of identity cannot be divided into economic, political, legal, or environmental development (Fakuhi, 2014). Legal identity allows people to enjoy the protection of the legal system and exercise their rights and property. As Vronskaya (2021) interprets Sokol'skii's (1912) view, cheap building is about optimization and modernization of the economy, rather than relying on self-help techniques and traditional materials. An economical building is not made out of the cheapest materials, rather it is constructed using methods that minimize surplus value and useless expenses, starting from the design stage till the end. The economic structure of a city can cause changes in the physical structure of places, which in turn can affect the dependence, harmony, and interest of people in that place. Therefore, changes in the economic structure also affect the social structure, which reflects the values of the nation. Social identity is formed by the difference between individual and united identity.

What is important in social identity is the difference between individual and united identity. It is knowing that there is a difference. Social identity emerges as a lifestyle phenomenon and is in strong demand because it reveals self-actualization and realization. Social identity is comprised of thoughts, symbols, and behavioral patterns classified in the cultural sector. It is important to recognize that identity is formed by connecting themes and ideas, and it has a strong relationship with political aspects. Political unity can be a significant factor in shaping social and national identity. Therefore, any policy change can affect the Bazaar, which is the first place to be impacted by economic changes. Such changes can create new thoughts and behaviors, leading to changes in identity and culture among its residents and customers. These changes gradually manifest in distinguishing oneself from others, preserving unity in the face of multiplicity, and ensuring continuity in the face of change.

Technology in the physical and environmental domains encompasses different aspects such as innovation, effectiveness, benefits, risks, and requirements, each having a distinctive character. The historical context of a city is a part of its cultural existence, reflecting the identity and visual values of that city, creating the common memory of its inhabitants, and showing the lifestyle of their ancestors.

The environmental spaces that define identity consist of two parts: the sum of beliefs and thoughts and social and national structures such as Historical Identity, place identity, and Cultural Identity, which influence other aspects of identity. Culture is a part of identity that develops and strengthens community and society. It leads to intellectual growth and moral and aesthetic development in society. Environmental identity gives people a boost of "self-actualization" and "self-awareness" from the natural environment but does not respond to human behavior. For instance, the Bazaar is not just a trade center but also hosts educational, political, economic, and religious issues. It is also a monument and art center for tourists. Therefore, it should not be seen as a separate environment. To ensure the sustainability of this valuable historic building, attention should be paid to its adaptive reuse, as communities have much to gain from such efforts. It is important to recognize that identity is formed by connecting themes and ideas, and it has a strong relationship with political aspects. Political unity can be a significant factor in shaping social and national identity. Therefore, any policy change can affect the Bazaar, which is the first place to be impacted by economic changes. Such changes can create new thoughts and behaviors, leading to changes in identity and culture among its residents and customers. These changes gradually manifest in distinguishing oneself from others, preserving unity in the face of multiplicity, and ensuring continuity in the face of change. Technology in the physical and environmental domains encompasses different aspects such as innovation, effectiveness, benefits, risks, and requirements, each having a distinctive character. The historical context of a city is a part of its cultural existence, reflecting the identity and visual values of that city, creating the common memory of its inhabitants, and showing the lifestyle of their ancestors. The environmental spaces that define identity consist of two parts: the sum of beliefs and thoughts and social and national structures such as Historical Identity, place identity, and Cultural Identity, which influence other aspects of identity. Culture is a part of identity that develops and strengthens community and society. It leads to intellectual growth and moral and aesthetic development in society. Environmental identity gives people a boost of "self-actualization" and "self-awareness" from the natural environment but does not respond to human behavior (Law, 1993; Ryu & Kwon, 2021). For instance, the Bazaar is not just a trade center but also hosts educational, political, economic, and religious issues. It is also a monument and art center for tourists. Therefore, it should not be seen as a separate environment. To ensure the sustainability of this valuable historic building, attention should be paid to its adaptive reuse, as communities have much to gain from such efforts (Kerr, 2004).

1.3. Applicability and Reuse of Heritage Buildings

The notion of adaptation applies to either the entire structure or to particular components within it, as posited by Douglas (2006). As per the opinion of Wilkinson (2012), the term "adaptation event" encompasses all activities linked to a specific authorization for existing buildings. Such events could range from a change in use, an addition to the structure, a renovation of a location, or an upgrade. In the case of multi-tenant properties, several such activities may coexist within the same building (Wilkinson, 2011). Building adaptation, as asserted by Langston (2010, p.5), can contribute to the economy, environment, and social welfare of society and, accordingly, should be a crucial factor to consider in terms of the availability of existing buildings (Wilkinson, 2011; Vasilache et al., 2013). Adaptive reuse is an investment strategy in real estate that arises from various conditions that render existing buildings obsolete, building adaptation is the act of transforming and enhancing the physical and economic characteristics of a building, prolonging its lifespan, and reducing the risk of redundancy, which is to say, enhancing its physical and economic qualities (Idemen et al., 2016; Langston, 2014). Adaptive reuse can significantly reduce total waste and life cycle costs, as well as increase the usefulness of historic structures (Blagojević & Tufegdžić, 2016; Rodrigues & Freire, 2017).

Buildings that have undergone three levels of rehabilitation or renovation for new purposes are called "adaptive reuse" buildings.

- These levels are "no significant change in the cultural texture,"
- "minimum impact changes,"
- "reversible changes" (Latham, 1999; ICOMOS, 2000, p.12).

Snyder (2005) asserts that the cultural and social perspective in the adaptation of industrial structures in the USA has been agreed upon, and our architectural heritage enables the maintenance of the validity of the social and cultural values reflected in historical structures for future generations. Wilkinson (2012) established the following criteria that indicate the possibility of architectural-historical buildings being sustainable: building age, adaptation trends over the years, area height and form, aesthetics, building quality, location, and several changes (Wilkinson, 2012). Continuity is the most crucial factor as comprehensive changes create a sense of loss, which contributes to the formation of a sense of identity throughout society (DETR, 2000; Lichfield, 2009).

As Rodrigues & Freire (2017) highlight, European cities often retrofit historic buildings to become multifunctional centers while preserving their historic values, reconciling historic preservation and sustainable design as a significant challenge of adaptive reuse. Furthermore, historic buildings involve myriad materials and construction techniques depending on the geographical region and construction period (Rodrigues & Freire, 2017). Tabriz Bazaar, which is a crucial edifice, contains local and natural materials such as yellow stone and red brick and traditional construction methods, depending on its geographical location. Additionally, the effects of adaptive reuse on the life cycle of Tabriz Bazaar, waste, cost reduction, and improving building functionality have been demonstrated (Bullen & Love, 2010; Rodrigues & Freire, 2017).

1.3.1. Adaptive Reuse Potential (ARP)

The Adaptive Reuse Potential (ARP) model is a tool that assesses the useful and physical life of historic buildings. It takes into account various obsolescence criteria such as physical, economic, social, functional, technological, legal, and political factors. This model helps determine the appropriate time for the building's structural evaluation, which can help increase the building's performance. Additionally, a detailed analysis can help determine the most suitable time for conservation organizations and investment (Golkarian, 2021b). The ARP model can assist in identifying the optimal time for the adaptive reuse of historic buildings and is a valuable tool for property management, Adapt-Star Model (Farjami, 2021).

1.3.2. Adapt-Star Model

According to experts in conservation science and Rodwell (2008), cultural heritage plays a crucial role in sustainable development and national identity. The ARP model, which identifies seven factors that contribute to building obsolescence, has been updated and transformed into the STAR model. This new model helps designers make more informed decisions about a building's durability, future reuse, and integration with sustainable environments. (Conejos et al., 2014) have further enhanced the ARP model by linking the seven obsolescence factors and design criteria to create an evaluation framework. This framework is presented in Table 2 and Figure 2, and it provides a comprehensive tool for evaluating a building's ability to withstand the test of time and remain relevant in today's sustainable world (Farjami& Türker, 2021).

Table 2. adaptSTAR model (Conejos et al., 2014)

Category	Criterion
Long Life (Physical)	Structural Integrity
	Material Durability
	Workmanship
	Maintainability
	Design Complexity
	Prevailing Climate
	Foundation
Location (Economic)	Population Density
	Market Proximity
	Transport Infrastructure
	Site Access
	Exposure
	Planning Constraints
	Plot Size
Loose Fit (Functional)	Flexibility
	Disassembly
	Spatial flow
	Convertibility
	Atria
	Structural Grid
	Service Ducts and Corridors
Low Energy (Technological)	Orientation
	Glazing
	Insulation and Shading
	Natural Lighting
	Natural Ventilation
	Building Management Systems
	Solar Access
Sense of Place (Social)	Image/ Identity
	Aesthetics
	Landscape/ Townscape
	History/ Authenticity
	Amenity
	Human Scale
	Neighbourhood
Quality Standard (Legal)	Standard of Finish
	Fire Protection
	Indoor Environmental Quality
	Occupational Health and Safety
	Security
	Comfort
	Disability Access
	Energy Rating
	Acoustics
Context (Political)	Adjacent Buildings
	Ecological Footprint
	Conservation
	Community Interest/ participation
	Urban Masterplan
	Zoning
	Ownership

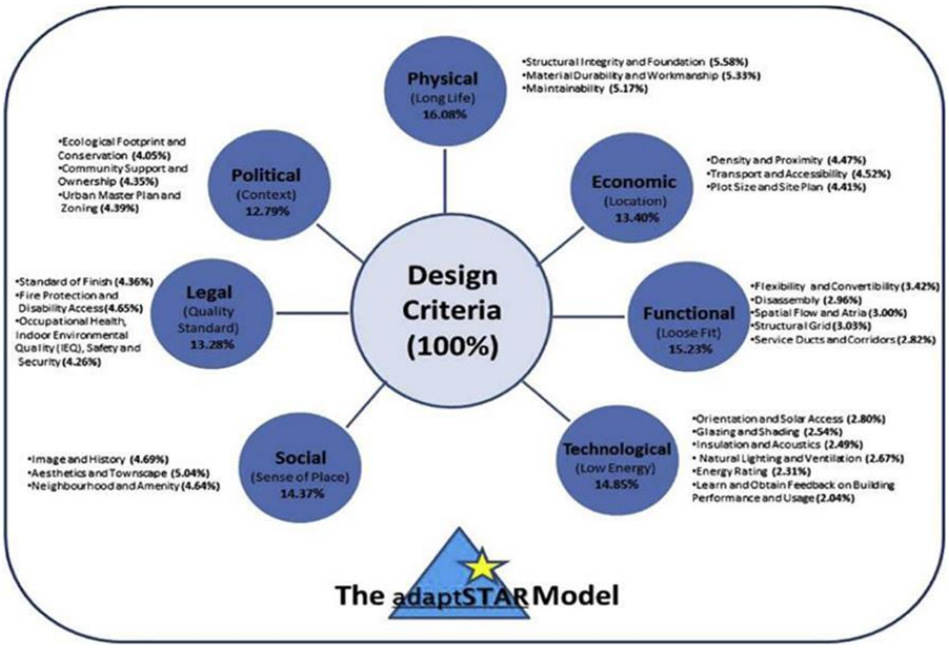


Figure 2. adaptSTAR model, (Conejos et al., 2014)

1.3.3. Preliminary Assessment of Adaptation Potential (PAAM)

In 2011, Wilkinson developed the Preliminary Assessment of Adaptation Model (PAAM) after analyzing 1237 building adaptations in the "alteration" stage in the CBD between 2009 and 2011, (Langstone et al., 2013). The PAAM analysis is based on various criteria in six different stages, as shown in Table 2. Used this well-known model to create a reliable diagram that presents the relationships between the critical key decision-making criteria and building adaptation, as shown in Table 3.

Table 3. PAAM's design principles criteria (Wilkinson, 2014)

Category	Attribute
Economic	Current value Investment value Yields Increase in value post adaptation Construction and development costs Convertibility (ease of conversion to other use and costs associated with the conversion)
Physical	Building height/number of storeys Floor plate size Shape of floor plate Service core location Elasticity (ability to extend laterally or vertically) Degree of attachment to other buildings Access to building Height of floors Structure Floor strength Distance between columns Frame Deconstruction (safe efficient and speedily) Expandability (volume and capacity) Flexibility (space planning) Technological and convertibility Dis-aggregability (reusability / recyclability)
Location and land use	Transport Access (proximity to airports, motorways, train stations, public transport nodes, buses and trams) Land uses (commercial, residential, retail and industrial or mixed use such as office and retail) Existing planning zones Rezoning potential Density of occupation
Legal	Ownership – tenure Occupation – multiple or single tenants Building codes Fire codes Access acts Health and safety issues Convertibility
Social	Community benefits – historic listing Transport noise Retention of cultural past Urban regeneration Aesthetics Provision of additional facilities / amenities Proximity to hostile factors Stigma Age
Environmental	Internal air quality Internal environment quality Existence of hazardous materials (asbestos) Sustainability issues

2. Material and Method

Tabriz market is a cultural heritage that was once the heart of the city and its first settlement point. However, with the advent of modern shopping malls, its importance has declined. This research was conducted with the aim of investigating the history of the formation of the market-oriented city from the Qajar period until now. In addition, it aims to increase the value and cultural significance of the market through logical transformation processes such as new, mixed or extended uses. As a result of the reconstruction, reconstruction and organization of the Tabriz market, it shows the importance of maintenance and reveals the changing needs of the local population. This research uses both qualitative and quantitative methods to comprehensively evaluate the adaptive reuse potential of Tabriz market.

The qualitative aspect of this study includes the collection and analysis of data on cultural heritage, restoration, and adaptive reuse. This method includes historical analysis, and literature review to understand the cultural significance of the market and its transformation over time. The selection of adaptive reuse models (ARM) is based on a theoretical research method that focuses on the historical typology of Tabriz, Iran. This approach allows for an in-depth exploration of how the market has evolved and how it is sustainably adapted for contemporary use.

The quantitative research method includes a case analysis of Tabriz's land market using the ARM research framework. This method quantifies adaptive reuse potential using specific evaluation models and certification systems.

Adaptive Reuse Models (ARM)

To evaluate the adaptive reuse potential of Tabriz market, this study uses several established models and frameworks.

Adaptive Reuse Potential (ARP): This model assesses the suitability of heritage buildings for adaptive reuse by considering factors such as structural integrity, historical value, and potential for new uses. The ARP framework helps identify buildings on the market that are most suitable for renovation and conversion.

Adapt-Star Model: The Adapt-Star model provides a systematic approach to assess and rank heritage buildings based on their adaptive reuse potential.

Preliminary Assessment of Potential for Adaptation (PAAM): The PAAM framework provides a preliminary assessment tool for assessing the feasibility of adaptive reuse projects. This includes a rapid assessment of the building's current condition, potential new functions, and the socio-economic benefits of adaptive reuse.

The application of these models is grounded in the broader framework of cultural sustainability and heritage protection.

Collection and processing of information was collected through field surveys, photographic documentation, and archival research. This included a thorough examination of the physical condition of the market, interviews with local business owners, and consultation with urban development experts.

Data analysis: Qualitative data were analyzed using thematic analysis to identify key themes and patterns related to cultural heritage and adaptive reuse. Quantitative data have been analyzed using statistical methods to assess the potential of adaptive reuse based on the criteria set by ARM. (Figure 3).

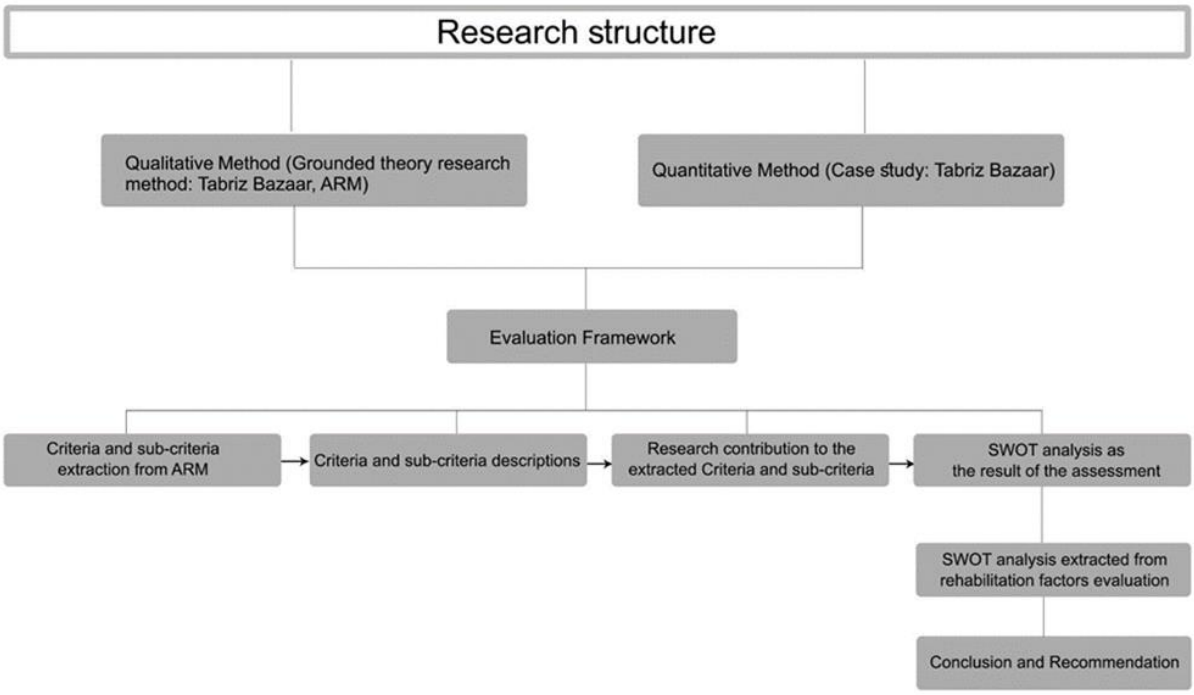


Figure 3. Article methodology structure (by author)

3. Findings and Discussion

The evaluation of Tabriz Bazaar, including its physical, economic, social, functional, technological, political, legal, and environmental improvement factors, has been discussed. The first step involved extracting criteria and sub-criteria from selected ARM systems worldwide. In the second stage, their descriptions and details were examined. Based on the research contribution to the extracted criteria and sub-criteria, the following step was reached.

Finally, a SWOT analysis was completed to evaluate the results. The ARM system was used to collect data and integrate it with the protection approach of Tabriz Bazaar. Based on the ARM system analysis, it was concluded that Tabriz Bazaar can be revitalized and improved. The study also highlights the potential of adopting ARM to revitalize heritage buildings by using strengths and opportunities as key steps. To determine if it meets the characteristics of a heritage structure (Tabriz Bazaar) among ARM's overarching criteria and sub-criteria, the rehabilitation criteria such as physical, economic, social, functional, technological, political, legal, and environmental were evaluated according to ARM sub-criteria explanations and research contributions (Table 4, Table 4a, Table 4b, Table 5, Table 5a, Table 6, Table 6a, Table 7, Table 8, Table 9, Table 10 and Table 11).

The economic criterion, which has only 13.04% of the 100% rate of the ARM system, was evaluated in each sub-criteria and given 1.44%. To measure the adaptation potential of Tabriz Bazaar, each sub-criteria was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 1.44% and the total percentages were taken.

Reason for Selection: The physical condition of a heritage building is fundamental to its adaptive reuse potential. Parameters such as structural integrity, building materials, and accessibility are crucial in determining the feasibility of adaptive reuse projects. For Tabriz Bazaar, which is a historical and complex structure, evaluating these aspects ensures that any reuse plan is realistic and preserves the structural heritage.

According to the international criteria, which has only 16.08% at 100% of the ARM system, 0.85% is given to the lower values. To use the adaptation potential of Tabriz bazaar, each sub-change was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 0.85% and the total percentages were taken (Table 5, Table 5a).

Table 4. Adaptive reuse model, physically

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	CONCLUSION
ADAPTIVE REUSE MODEL CRITERIA	PHYSICAL (16.08%)	Structure (0.85%)	Issues regarding the adaptation process to protect the building structure	In the traditional Iranian city structure, the Bazaar developed in a linear manner. It serves as the backbone of the city and moves towards the foundation gates. After the 20th century, automobiles brought new usability and forms of movement to Iranian cities and made indispensable changes in the size of streets and the traditional structure of cities.	POWER AND OPPORTUNITY: As a core of the city, it establishes a connection between all parts of the city.
		Structural integrity and infrastructure (0.85%)	Strengthening the ground structure of the building with the aim of meeting different future building uses and loading scenarios - Creating the basis for potential vertical expansion of the facility and strengthening of the structure.	Advanced readiness for change is the transition from a "traditional" structure to a "modern" one with new developments and advanced materials.	STRENGTH: The imposition of preserving one's own identity against modernity. WEAKNESS: Deformation of external structures and elements due to modernity. THREAT: Losing values and self-identity under the influence of modernity.
		Floor plate size/ Typical floor area (2.68%)	It is useful to have this information for adaptive reuse to introduce new functions.	The floors generally consist of soil that flattens over time. The shops should have been no more than three meters wide, which would have been sufficient for the craftsmen to attend to their business and put most of their products for sale within easy reach. The floor is usually raised 2 or 3 feet above ground level.	WEAKNESS: Due to narrow corridors, there is insufficient space for traders.
		Location of service core (0.85%)	Not making any changes to the main service location may be effective in the adaptation of the heritage building.	Dokkans as interactive spaces, rastes as main communication arteries, saras as the main bodies of the Bazaar and timçes as public spaces actively contribute to urban life.	STRENGTH: Dokkans as interactive spaces, rastes as main communication arteries, saras as the main bodies of the Bazaar, and timçes as public spaces actively contribute to urban life.
		Flexibility (0.85%)	Ease of extending the building laterally or vertically. Other characteristics of flexibility are building form, organizational space and ease of compartmentalization. (ability to extend laterally or vertically)	This Bazaar has improved the quality of space by connecting residential and commercial areas and encouraged social interactions, making the public's public activities tightly connected to the Bazaar.	STRENGTH: Social interactions are encouraged by connecting residential and commercial areas of the context.
		Material durability and workmanship (0.85%)	The more durable materials used, the longer the life of the building.	Tabriz Bazaar is generally made of red brick and yellow stone piles and is built with a wooden structure ceiling and roof system.	STRENGTH: Using red brick and yellow stone piles as durable materials.

Table 4a. Adaptive reuse model, physically

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	CONCLUSION
ADAPTIVE REUSE MODEL CRITERIA	PHYSICAL (16.08%)	Degree of connection to other buildings (0.85%)	Degree of connection to other neighboring buildings and access to the site	Residential neighborhoods are located in the spaces between the city gates and the markets.	STRENGTH: Market's dominance in the surrounding area OPPORTUNITY: Easy accessibility to surrounding buildings.
		Building access / Site access (0.85%)	Access to buildings and regulations in building design.	The market route usually starts from the main gate of the city and ends in the city center, sometimes extending to the side gate of the city. The existence of a network of different connecting roads within the bazaar and the ability of passers-by and citizens to use them helped the bazaar to continue its expansion (Figure 5.21). Crossovers often connect the city center to roads around and outside the city. (Figure 5.20).	STRENGTH: Raste and Corridors connect the doors of the Bazaar in the interior. WEAKNESS: Due to the lack of traffic in space, wide and pedestrian roads, it is difficult for passers-by to reach the market.
		Height of floors (0.85%)	No description	The floor is usually raised 2 or 3 feet above ground level and is regularly raised towards the road with a seat. The first floor is always used for commercial purposes, while the second floor is used as the main warehouse or accounting office and private business meetings.	STRENGTH: Light load-bearing structure. OPPORTUNITY: It is economical and advantageous in terms of material usage during restoration.
		Soil strength (0.85%)	In adaptation, soil strength should be evaluated to determine land uses that are possible and physically compatible with the existing ground structure.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Design complexity (0.85%)	This element consists of various geometries associated with the design and innovation of the building.	The main structure of the Bazaar consisted of covered passages with many shops on both sides. Each of the passages and corridors was devoted to the display of a particular commodity. For this reason, various sections of the Bazaar were named according to the items displayed one after the other. The largest area in the traditional market is Timcheh, which has the most ornate ceiling; decorations are usually made of brick or wood with geometric elements. These areas are generally safe areas where more valuable items, such as floor coverings, are stored and displayed, away from sun and wind damage.	OPPORTUNITY: Methods and materials can be used for future generations.
		Labor (0.85%)	It is related to the quality of workmanship applied to the structure and coatings of the building.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Table 4b. Adaptive reuse model, physically

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	CONCLUSION
ADAPTIVE REUSE MODEL CRITERIA	PHYSICAL (16.08%)	Prevailing climate (0.85%)	It deals with design according to changing climate conditions, determining appropriate solutions for hot or cold temperature zones.	Tabriz bazaar has a brick system and is more than one kilometer long. It is designed to be climate sensitive. The dome is used to heat the building during the very cold winter months and hot summer months. In general, the building material is mainly brick and stone, as the brick vault acts as a high thermal mass element for heat saving. The main advantage of this material is to produce a thermal "envelope" that helps control temperature.	STRENGTH: Durable materials and elements were used in the interior and exterior of the bazaar for thermal control and sustainability.
		Deconstruction (Efficient assurance and speed) (0.85%)	In the adaptation process of heritage buildings, the basis is related to the preservation of existing materials and main texture structure.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Extensibility (0.85%)	Expanding the volume and capacity of the building.	As an exception, the Tabriz bazaar connected the northern and southern parts of the city by forming a Pol-Bazar that crossed the Mehran Road River along its main axes.	STRENGTH: The line plan shape, which is a backbone of the city, can be extended from the North and South. OPPORTUNITY: It can grow and spread into the surrounding area by providing new roads and access.
		Flexibility (space planning) (0.85%)	It focuses on the potential of an existing building with flexibility in planning for new uses during the adaptation process.	Construction type: Special high-flexibility moment-resisting frame construction system with high resistance to earthquakes, reinforced concrete complex structures and stone structures.	STRENGTH: The line plan shape, which is a backbone of the city, can be extended from the North and South. OPPORTUNITY: It can grow and spread into the surrounding area by providing new roads and access.
		Technological and convertibility (0.85%)	This element attempts to introduce adaptive reuse technology based on the recyclability potential of existing buildings.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Sustainability (0.85%)	This element addresses issues of improving building performance throughout its life, where maintenance characteristics are defined as a building's ability to maintain operational resources.	The strategies written by the researchers will certainly help heritage conservation authorities move towards a context-driven sustainable conservation system for the Tabriz Bazaar world heritage site.	OPPORTUNITY: It will be useful for the future adaptation process.
		Dispute (0.85%)	Reusability/recyclability	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Table 5. Adaptive reuse model, Economic criteria

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	RESULT
ADAPTIVE REUSE MODEL CRITERIA	ECONOMIC (13.04%)	Population density (1.44%)	"Population Density-location within major city, CBD, etc. Operational land use issues include density.	Shops have been established on both sides of the street and sidewalk with an excellent opportunity for population density residents and pedestrian traffic, and gradually an excellent opportunity has developed in some streets of the commercial boom and are shaped b passages. (Figure 5.22)	STRENGTH:Pedestrian design is designed according to population density.
		Occupational density (1.44%)	In addition to improving economic sustainability, it increases the density of the built environment to prevent erosion of green belt land within and around the existing area.	The two most important sources of changes in the old texture of the city of Tabriz are modernization and economic gains. The transition from tradition to modernity has led to a comprehensive urban transformation in the city center of Tabriz. Accordingly, the spatial structure of Tabriz city center has become a strong economic marke for traveler services. Later, a massive reconstruction project of downtown Tabriz began to detail such planning. According to this planning project, the surroundings of the Jame Mosque and its arc will be isolated with a green belt, and the rest of the old quarter will be converted into some modern shopping malls, hotels and residential towers.	WEAKNESS: This criterion presents a weak point that should be taken into account by experts and conservators in the adaptation process of Taberiz Bazzar.
		Productivity/Income (1.44%)	It focuses specifically on distinctiveness as a cultural value, through its historical or aesthetic significance and the cultural experiences it provides for the community.	In traditional markets, the light that enters the market through the skylights and follows it on the floor is meaningful to the traction an transport customers and encourages them to move forward. In the traditional bazaar, the light falling on the floor is indispensable for its rotation, which increases the visual appeal of the bazaar.	STRENGTH: The arcade benefits from natural light and ventilation from the skylight.
		Current value (1.44%)	It may be related to the current value of the heritage structure and contribute to the process of adaptive reuse.	The most moral and spiritual unity in Iranian history belonged to the Safavid period. Characteristic values of Eastern societies such as bravery, philanthropy, protecting the lower class, and sainthood are known as Craftsman culture. Tabriz is a place frequented by many people every year due to its historical values. The presence of a Cemevi mosque for Shiite Muslims in the city center of Tabriz is the main reason for the development of this city.	STRENGTH: Historical value still continues in the Bazaar due to certain characteristic aspects. Opportunity: Over time, through the process of reuse, historical values will be transferred to the nev generation.

Table 5a. Adaptive reuse model, Economic criteria

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	RESULT
ADAPTIVE REUSE MODEL CRITERIA	ECONOMIC (13.04%)	Transportation and accessibility (1.44%)	Uyum sürecindeki ekonomik soruna bağlı olarak, diğer komşu binalarla olan bağlantı derecesi ve tarihi binaların ana caddeden sahaya erişim ile ilgilidir.	"FIGURE 5.21 In this Region, Most of the access roads are local and pedestrian-dominated main roads. ".	STRENGTH: The presence of some functional elements such as shortcuts and comforting items for customers and sellers in the Bazaar.
		Plot size and layout (1.44%)	Arsa boyutu – inşa edilen alan, mekansal oranlar, çevreleme vb.	The Bazaar has some stall areas such as platforms that help customers stop and relax during their short shopping; These spaces shorten the long journey to the market. Rates are also impressive things in a traditional market. Bazaar plans and manufacturing procedures are considered from the perspective of climate reaction. In the traditional Tabriz bazaar of Tabriz, the shops are only enough for the seller and only one person can fit in and display their produc easily. The buyer must stand outside the store, and at the same time, it will be difficult for pedestrians to cross the street if the store is full.	STRENGTH: The presence of some functional elements, such as shortcuts, that are comforting for customers and sellers in the Bazaar. OPPORTUNITY: Thanks to the construction of the market plan and production procedures based on climate reaction, it will be easy to adopt sustainability and recyclability. WEAKNESS: Lack of space for passers-by makes i difficult for them to cross the road, and sellers even lose a few customers because of it.
		Value increase after adaptation (1.44%)	Adaptasyon sürecinde tarihi değerin korunmasına yönelik hususlar içerir.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Convertibility (1.44%)	Başka bir kullanıma dönüştürme kolaylığı ve dönüştürmeyle ilişkili maliyetler sağlar.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Exposure (1.44%)	Riske maruz kalma, bir duyarlılık testi şeklidir. Her eskime oranı olası bir aralık olarak ifade edilir.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Reason for Selection: Economic viability is essential for sustainable adaptive reuse. Parameters like population density, economic productivity, and market potential are critical for ensuring that the reused structure can generate economic benefits and support local development. For Tabriz Bazaar, understanding its economic impact helps in planning for a functional and financially sustainable future.

According to the Social criteria, which has only 14.37% at 100% of the ARM system, the lower values are given 1.1%. To use the adaptation potential of Tabriz bazaar, each sub-change was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 1.1% and the total percentages were taken (Table 6).

Reason for Selection: The social value of a heritage building relates to its role in community identity, culture, and cohesion. Evaluating social criteria ensures that the reuse plan will enhance social benefits, including community engagement and cultural preservation. For Tabriz Bazaar, social criteria help in understanding its role in community identity and social interaction.

Looking at the Functional criterion, which has only 15.23% of the 100% rate of the ARM system, each sub-criteria is given 3.04%. To measure the adaptation potential of Tabriz bazaar, each sub-criteria was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 3.04% and the total percentages were taken. (Table 7)

Reason for Selection: Functional adaptability is key to the successful reuse of heritage buildings. Parameters such as transformability, flexibility, and suitability for new functions are critical. For Tabriz Bazaar, assessing functional criteria ensures that the bazaar can accommodate new uses while preserving its historical essence.

Looking at the Technological criterion, which has only 14.85% of the 100% rate of the ARM system, each sub-criteria is given 2.47%. To measure the adaptation potential of Tabriz bazaar, each sub-criteria was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 2.47% and the total percentages were taken (Table 8).

Reason for Selection: Technological advancements can enhance the usability and sustainability of heritage buildings. Parameters like technological infrastructure, energy efficiency, and modern amenities are important. For Tabriz Bazaar, technological criteria help in planning upgrades that respect historical integrity while meeting contemporary needs.

Looking at the Political criterion, which has only 12.79% of the 100% rate of the ARM system, each sub-criteria is given 2.13%. To measure the adaptation potential of Tabriz bazaar, each sub-criteria was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 2.13% and the total percentages were taken (Table 9)

Table 6. Adaptive reuse model, Social criteria

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	CONCLUSION
ADAPTIVE REUSE MODEL CRITERIA	**SOCIAL (14.37%)**	Community benefits – historical listing (1.1%)	Buildings must meet the needs of users and the wider community.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Density of valuable cultural resources in the environment / Historical listing (%1.1.)	Typically, buildings or places must be of cultural or historical significance and/or be included on the Heritage Register and/or the World Heritage List.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Image and identity/ Image and history (1.1%)	Social and cultural qualities, values, etc.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Transport noise (1.1%)	In general, various types of noise can have disadvantages for the life cycle of historic buildings.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Preservation of cultural past (1.1%)	Taking into account the past cultural history of heritage buildings is one of the key factors during adaptation.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Aesthetics and landscape/City view (1.1%)	Aesthetics were important in adaptation and were evaluated based on mass, form, composition, use of materials, and so on.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		History/ Authenticity (1.1%)	Original fabric, timelessness, socio-cultural traditions, practices, historic character or fabric, etc.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Table 6a. Adaptive reuse model, Social criteria

CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS	CONCLUSION
ADAPTIVE REUSE MODEL CRITERIA	**SOCIAL (14.37%)**	Urban transformation (1.1%)	Buildings occupying prime areas are considered ripe for urban renewal and redevelopment. Heritage capital adaptation can support urban regeneration in older areas.	The Tabriz bazaar has various components that serve different functions. Each component plays a specific economic and social role in an urban generation."	STRENGTH: The urban generation is influenced by the social and economic roles of the Tabriz market.
		Neighborhood and convenience (1.1%)	The transformability and expandability of individual buildings will help old neighborhoods modernize and adapt to new urban growth patterns with less social and economic disruption.	Residential neighborhoods are located in the spaces between the city gates and the markets.	STRENGTH: The strong bond between the bazaar and the surrounding neighbors. THREAT: Surrounding neighborhoods may be affected after improper renovation of the main center; Bazaar.
		Providing additional facilities/amenities (1.1%)	The building provides relevant amenities and facilities within its neighborhood that can add value to the local community.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Proximity to hostile factors (1.1%)	Proximity to hostile factors or aesthetics includes noise, odor, pollution, proximity to power plant	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Stigma (1.1%)	Stigma	The bazaar lost its importance over time, was destroyed over time due to lack of restoration and mostly not being used by the public, and new activities could not be carried out in the bazaar. In order for the Tabriz bazaar to have a lively, dynamic and busy structure, it must be usable by everyone."	WEAKNESS: lack of restoration and useless to everyone. THE THREAT: losing one's worth and one's own identity.
		Age (1.1%)	Building Age	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Table 7. Adaptive reuse model, Functional criteria

	CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS
ADAPTIVE REUSE MODEL CRITERIA	FUNCTIONAL (15.23%)	Flexibility and convertibility (3.04%)	Functionally and technologically, the building has the potential for internal flexibility and reversibility for future transformation.	The shape of an Islamic Iranian city offers the city's stability, protection, identity, originality and meaning. Arq and Baro (Fortress) - Jame Masjid (Mosque) Bazaar - Residential areas and neighborhoods - Historical heritage such as the street network, exterior views and commercial buildings in the Bazaar have created a coherent, interconnected and compact area in the city.	STRENGTH: The form and stable characteristic aspects of the Islamic bazaar can be durable in the transformation process. WEAKNESS: During the conversion process, the arcade is durable but lacks flexibility.
		Disassembly (3.04%)	It has reuse, recycling, disassembled systems and modularity options.	Her yıl, ülkenin kültürel miras organizasyonu, bu güzel eski kompleksin restorasyonu ve yeniden canlandırılması için devlet bütçesinden ve tüccarların mali yardımından önemli miktarda fon harcıyor. Yenileme için ise geri dönüşümlü inşaat malzemeleri restorasyon	STRENGTH: Savings in energy and material usage. OPPORTUNITY: Heritage durability due to restoration
		Spatial flow and atrium (3.04%)	Spatial flow – mobility, open plan, fluid and continuous 5 Convertibility – divisibility, flexibility, multifunctionality. Atria – open spaces, interior gardens etc.	Some historical Jame' mosques in the city take the form that part of their open space or courtyard is on the route of the cities, and people enter through the entrance and exit through the side door after passing the mosque's courtyard. A Rasteh is also found near manufacturing workshops and a number of workshops and shops, sometimes occurring in a lane or in an open area.	STRENGTH: The existence of open spaces and the interconnection of spaces provide ease of orientation and circulation.
		Structural grid (3.04%)	The ideal and economic spread is limited and liable to change completely.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Service channels and corridors (3.04%)	Vertical circulation, service elements, raised floors, etc.	The first floor was always used for business and commercial purposes, while the second floor was the main warehouse or accounting office and a place for private business meetings. While the first floor rooms were used for daytime activities and storage at night, the upper rooms were for shelter, rental and heating with stoves. Some houses had stalls for caravans.	STRENGTH: The floors on the base are clearly separated, accurate and clear, and each unit has its own function.

Table 8. Adaptive reuse model, Technological criteria

	CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS
ADAPTIVE REUSE MODEL CRITERIA	TECHNOLOGICAL (14.85%)	Orientation and sun access (2.47%)	Micro-climate siting, prevailing winds, sunlight and Solar access-measures for summer and winter sun	Heat control materials, structures and openings were used in the bazaar.	STRENGTH: Heat control materials and structures, openings were used in the bazaar.
		Glass and shading (2.47%)	Glazing: sunlight glare control, regulation of internal temperatures, etc. shading – thermal mass, sunshades, automated blinds, etc.	Bazaar domes are the light coming from the dome inside the bazaar. The application of light in most traditional monuments depends on components such as the spiritual dimension and sanctity of light, light adjustment and consistency, temperature control and energy storage in proportion to climatic conditions. In Persian architecture, the hierarchy of darkness and light	STRENGTH: Adequate thermal control elements such as domes and skylights on the roof. The presence of openings for ventilation and air circulation.
		Insulation and Acoustics (2.47%)	noise control, sound insulation, etc.	The lack of parking areas around the bazaar, which increases the risk of traffic accidents, also causes excessive air and noise pollution.	STRENGTH: Presence of noise and gas pollution control systems in the interior of the bazaar. WEAKNESS Lack of indoor noise and gas pollution control systems. THREAT: Lack of parking spaces in the surrounding area increases the risk of accidents.
		Natural lighting and ventilation (2.47%)	Natural lighting – inclusion for natural daylight, efficient lighting systems, etc. Natural ventilation – optimize airflow, quality fresh air, increase ambient air intake, etc.	"Natural light can penetrate the interior through skylights, which can also provide natural ventilation. Entrances and heights have been reduced and openings have been minimized to prevent heat wastage of the environment. Therefore, the structural system and scale of the Bazaar block were chosen according to the regional situation and local masonry to fulfill the spatial and architectural values.	STRENGTH: To provide energy saving and a healthy environment with a sustainable approach.
		Energy rating (2.47%)	Energy rating – environmental performance measures	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Feedback on building performance and usage (2.47%)	Taking feedback about the adaptation reuse from the projection users stakeholders, etc.	Tabriz Historical Bazaar has offered different functions to many stakeholders throughout history.	STRENGTH: Bazaar offers flexible options to capture feedback from stakeholders and conservators on the renovation process. OPPORTUNITY: Feedback from stakeholders and guardians can be updated according to future technology.

Table 9. Adaptive reuse model, political criteria

	CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS
ADAPTIVE REUSE MODEL CRITERIA	POLITICAL (12.79%)	Ecological footprint and protection (2.13%)	Ecological footprint – human carrying capacity and conservation, including the principles, guidelines and conventions governing the conservation of tangible and intangible heritage	Government and military centres: The relationship of the bazaars with the government and power has always been full of contradictions; In fact, constant interaction and conflict have fostered this contradictory relationship, socio-political security and stability that are prerequisites for commercial and economic prosperity.	STRENGTH: The relationship between the bazaar and government and administrative power creates security and stability.
		Community interest/participation (2.13%)	Community interest/participation: stakeholder engagement and support	"The marketplace was a place that centralized the interconnected interests of different stakeholder groups. "As the center of international commercial and cultural exchange, bazaars have played an important role in the social and economic development of the region."	STRENGTH: Bazaar offers flexible options to capture feedback from stakeholders and conservators on the renovation process. OPPORTUNITY: Feedback from stakeholders and guardians can be updated according to future technology.
		Community Support and Ownership (2.13%)	Ownership – commitment to collaboration, sense of community or ownership, etc. Community support: stakeholder engagement and support	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Urban master plan and zoning / Urban transformation (2.13%)	Adapting buildings to urban regeneration projects provides social objectives such as affordable (or social) housing or employment opportunities in areas with high unemployment.	Standard negotiation with the legitimate Bazaar, trusted among other factions in the Bazaar. Capacity building in the education and advancement of young people working in Çarşı, (These young people, who are mostly relatives and sons of Çarşı, have owned commercial places in Çarşı for a long time.)	STRENGTH: Urban transformation had some kind of social and economic dynamic, so it has more impact on it.
		Redevelopment potential (2.13%)	No description	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Zoning (2.13%)	The municipal policy and zoning plan regarding the area where the building is located are taken into account.	During the Qajar period (1794–1924), the interaction of these dynastic rulers with Western countries and the inspiration they drew from the Industrial Revolution was the abandonment of old patterns and the use of new methods. With integration into the world economy, local markets disappeared and political and financial dependence on foreign governments began. All these components led to citywide functional zoning. The development of new functions such as roads and streets with different functions, a variety of architecture, modernism, government offices and the bourgeois class were characteristic of this period."	STRENGTH: The strong bond and connection between the bazaar and the state causes the development of the bazaar area to be seriously considered.

Reason for Selection: Political support and legal frameworks are crucial for the success of adaptive reuse projects. Parameters such as governmental policies, political stability, and legal protections influence the feasibility and implementation of reuse plans. For Tabriz Bazaar, political criteria ensure alignment with local and national heritage conservation policies.

Looking at the Legal/Zoning criterion, which has only 13.28% of the 100% rate of the ARM system, each sub-criteria is given 2.21%. To measure the adaptation potential of Tabriz bazaar, each sub-criteria was analyzed in the bazaar. As a result, the ARM criteria available in the Tabriz market were calculated as 2.21% and the total percentages were taken (Table 10).

Reason for Selection: Legal and zoning regulations directly affect the possibilities for adaptive reuse. Parameters like zoning laws, heritage protection regulations, and legal incentives are critical for compliance and feasibility. For Tabriz Bazaar, legal criteria ensure that the reuse plan adheres to relevant laws and maximizes legal benefits.

Based on the analysis of this study, the adaptation of the bazaar was made according to sustainability approaches, but sustainability criteria were not evaluated by the Adaptstar system. Considering the Environmental criterion, which has only 0.00% of the 100% rate of the ARM system, it is divided into 4 main sub-criteria, without each sub-criteria being in the ARM system. When the mentioned criteria were analyzed to measure the adaptation potential of Tabriz Bazaar, it was found that Tabriz Bazaar has a high degree of sustainability, which means that Tabriz Bazaar will adapt to sustainable adaptation. Therefore, it should be known as a missing criterion that should be taken into consideration for the upgraded version of new models (Table 11).

Table 10. Adaptive reuse model, Legal criteria

	CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS
ADAPTIVE REUSE MODEL CRITERIA	LEGAL (%13.28)	Finishing standard (2.21%)	Standard of finish – ensuring a high standard of workmanship	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Fire protection and disabled access/Fire codes (2.21%)	Fire protection – provisions for fire safety	There is no quick access to outdoor parts of the bazaar in times of potential hazards such as a fire.	WEAKNESS: Encounter life-threatening THREAT: Encounter life-threatening
		Occupational health, IEQ, safety and Security (2.21%)	"Occupational health and safety – specific needs of building occupants, health and safety risks, building hazards and risk management plans. Non-hazardous materials, natural fabrics, etc. IEQ provisions for. Security - ensuring direct and passive surveillance designs"	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Convertibility (2.21%)	Convertibility – diversity, flexibility, multifunctionality	Most of the stores are used multifunctional and each floor has different functions. The caravanserais in the bazaar gave their current location to	STRENGTH: The existence of multifunctionality.
		Energy rating (2.21%)	Energy rating – environmental performance measures	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Acoustic (2.21%)	Acoustics – noise pollution control, sound insulation, etc.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.

Table 11. Adaptive reuse model, environmental criteria

	CRITERION		SUB-CRITERIA	DESCRIBING	RESEARCH CONTRIBUTIONS
ADAPTIVE REUSE MODEL CRITERIA	ENVIRONMENTAL	"Indoor air quality	Indoor air quality should be considered as an ecological sustainability factor for the adaptation of historic buildings, as some ventilation devices may have a negative impact.	OPPORTUNITY: The method used may be useful for upcoming sustainable technology.	STRENGTH: Dome and roof openings are natural ventilation systems.
		"Indoor environmental quality	Indoor environmental quality requires special considerations in the adaptation of historical buildings in order to choose appropriate means not to destroy the HB valu	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		Presence of hazardous materials (asbestos)	This article addresses the specific concern for the types of hazardous materials present in HB and attempts to find a solution to eliminate asbestos.	MISSING CRITERIA	Missing criteria exist in adaptive reuse models that do not work in the marketplace research domain.
		sustainability issues	Buildings are inextricably linked to sustainability issues, and the construction environment as buildings contributes approximately half of all greenhouse gas emissions.	"The application of light depends on components such as spiritual dimension and light sanctity, light adjustment and consistency, temperature control and energy storage in proportion to climatic conditions. In Persian architecture, the hierarchy of darkness and light is used to coordinate and orient from one space to another and to indicate time. Courtyards are known as climate changers and allow indoor-outdoor activities to protect the building from dust, sun and wind. Courtyards serve as light sources in a building type that must limit exterior openings. "They also act as air gaps through absorbers of cold, dense night air, and fresh morning and post-rain air enters the building through large openings into the courtyards from the surrounding areas."	STRENGTH: All the elements and materials used in the bazaar are part of sustainability, and all these mentioned aspects help ventilate the environment and purify it from pollution.

Reason for Selection: Environmental sustainability is vital for the long-term success of adaptive reuse projects. Parameters such as energy efficiency, environmental impact, and sustainability practices are important. For Tabriz Bazaar, environmental criteria ensure that the reuse plan contributes to environmental sustainability.

The assessment of a building requires the evaluation of various criteria. These criteria include physical aspects such as the building's structure, materials, accessibility, and technological advancements. Additionally, the ecological status of the building is considered. Economic criteria include population density, diversity, productivity, and the design and exposure of the built environment. Social criteria involve the evaluation of factors such as stigma, age, neighborhood, identity, and culture. The

transformability, flexibility, and insulation of the building are evaluated in functional and technological criteria. Legal and political aspects, environmental sustainability, and energy rating are considered in the final chapters of the analysis. If the common features of the bazaar match with the sub-criteria of the ARM, the revival process for the bazaar harmony can be predicted. If the comparative livability study lacks sufficient criteria and sub-criteria, the bazaar must be revised according to interrelated features to ensure the continuity of the importance of the heritage. The preservation of heritage structures is achieved by integrating sustainable plans and preserving their historical values and originality.

4. Conclusion and Suggestions

In the field of Heritage Building (HB), the preservation, appropriate modification, and development of previous expressions are emphasized to identify cultural heritage values and transfer them to future generations. Therefore, determining the historical value is a crucial component of renewal processes, (Ashworth, 1997). Several studies and improvement systems for the sustainability of historical buildings have been proposed worldwide for the protection of historical monuments. This study focuses on the Tabriz Bazaar ARM method as a rehabilitation and revitalization method for one of the most important heritage structures in Tabriz City, (Table 12, 12a, 12b). To analyze the compatibility potential based on the ARM calculation system, the ARM system's evaluation was carried out to measure the adaptation potential of Tabriz Bazaar. The ARM system consists of criteria and sub-criteria, and each criterion is designed according to value percentages. The research applied and evaluated the ARM system's criteria percentages in Tabriz Bazaar by comparing the market's factors with the ARM criteria. The percentage of suitability is considered a positive side (Strength and Opportunity), and the percentage of defect is considered a negative side (Weakness and Danger). Based on the SWOT analysis, the Bazaar's success in the adaptation process is shown as strengths and opportunities with 53.8% and weaknesses and threats with 47%.

Strengths: Architectural significance, historical value, central location, community identity.

Weaknesses: Structural vulnerabilities, outdated infrastructure, economic challenges.

Opportunities: Potential for tourism, economic revitalization, and community engagement.

Threats: Political instability, legal restrictions, environmental degradation.

The concepts of globalization and modern architecture have influenced the architecture and urban planning of traditional bazaars, which were designed to reflect their local identity. Tabriz, one of the oldest cities on the historical Silk Road in Iran, has undergone cultural changes that have affected its Tabriz Bazaar, an objective symbol of traditional and semi-traditional architecture. While modern shopping malls have replaced some traditional bazaars, others can coexist in the same atmosphere. Yet, traditional bazaars in big cities do not meet people's psychological needs, shifting the architectural culture towards semi-modern and modern. To revitalize and rehabilitate Tabriz Bazaar, sub-criteria were reviewed based on age level and suitability to Tabriz Bazaar's identity. The main purpose of the rehabilitation process is to protect heritage buildings for future generations. ARM criteria and sub-criteria align with many of the arcade's features, providing an opportunity for adaptive reuse and revitalization. However, features that do not meet sufficient criteria will be considered suggestions, and a revitalization procedure with solutions for these inadequate features is essential. Traffic problems and lack of access points to the city center may cause a significant decrease in the number of visitors.

Table 12. SWOT Analysis extracted from ARM systems according to their suitability for Tabriz Bazaar identity

	CRITERIA		SUB-CRITERIA	MISSING SUB-CRITERIA
SWOT ANALYSIS OBTAINED FROM ARM SYSTEM	PHYSICALLY	STRENGTH	*PHYSICAL: STRUCTURE - 0.85% *PHYSICAL: STRUCTURAL INTEGRITY AND FOUNDATION - 0.85% *PHYSICAL: SERVICE BASIC LOCATION- 0.85% *PHYSICAL: FLEXIBILITY- 0.85% *PHYSICAL: MATERIAL DURABILITY AND WORKMANSHIP-0.85% *PHYSICAL: DEGREE OF CONNECTION TO OTHER BUILDINGS-0.85% *PHYSICAL: ACCESS TO THE BUILDING/ ACCESS TO THE SITE-0.85% *PHYSICAL: FLOOR HEIGHT - 0.85% *PHYSICAL: DOMINANT CLIMATE- 0.85% *PHYSICAL: EXPANDABILITY- 0.85% *PHYSICAL: FLEXIBILITY SPACE PLANNING- 0.85%	
	ECONOMIC		*ECONOMIC: POPULATION DENSITY - 1.44% *ECONOMIC: INCOME- 1.44% *ECONOMIC: CURRENT VALUE - 1.44% *ECONOMIC: TRANSPORTATION AND ACCESSIBILITY- 1.44% *ECONOMIC: PLOT SIZE AND SITE PLAN - 1.44%"	
	SOCIAL		*SOCIAL: URBAN TRANSFORMATION- 1.1% *SOCIAL: NEIGHBORHOOD AND BEAUTY- 1.1%	
	FUNCTIONAL		*FUNCTIONAL: FLEXIBILITY AND CONVERTIBILITY - 3.04% *FUNCTIONAL: DISASSEMBLY- 3.04% *FUNCTIONAL: SPATIAL FLOW AND ATRIA- 3.04% *FUNCTIONAL: SERVICE AND CORRIDORS- 3.04%	
	TECHNOLOGICAL		*TECHNOLOGICAL: ORIENTATION AND SOLAR ACCESS - 2.47% *TECHNOLOGICAL: INSULATION AND ACOUSTICS- 2.47% *TECHNOLOGICAL: NATURAL LIGHT AND VENTILATION- 2.47% *TECHNOLOGICAL: FEEDBACK ON BUILDING PERFORMANCE-2.47% *TECHNOLOGICAL: GLAZING AND SHADING - 2.47%	
	POLITICAL		*POLİTİK: EKOLOJİK AYAK İZİ VE KORUMA-**2.13%** *POLİTİK: TOPLUM ÇIKARLARI/ KATILIM- **2.13%** *POLİTİK: İMAR- **2.13%**	
	LEGAL		*LEGAL: CONVERTIBILITY - 2.22%	
	ENVIRONMENTAL		*ENVIRONMENT: INDOOR AIR QUALITY - NC* *ENVIRONMENT: SUSTAINABILITY ISSUES - NC*	

Table 12a. SWOT Analysis extracted from ARM systems according to their suitability for Tabriz Bazaar identity

	CRITERIA		SUB-CRITERIA	MISSING SUB-CRITERIA
SWOT ANALYSIS OBTAINED FROM ARM SYSTEM	PHYSICALLY	WEAKNESS	*PHYSICAL: STRUCTURAL INTEGRITY AND FOUNDATION* *PHYSICAL: FLOOR PLATE DIMENSION/ TYPICAL FLOOR AREA* *PHYSICAL: ACCESS TO THE BUILDING/ ACCESS TO THE SITE* *PHYSICAL: FLAT FLOOR- NA*	*PHYSICAL: WORKMANSHIP *PHYSICAL: RECONSTRUCTION (SAFE, EFFICIENT AND FAST) *PHYSICAL: TECHNOLOGICAL AND CHANGEABILITY *PHYSICAL: INCOMPATIBILITY*
	ECONOMIC		*ECONOMIC: VOCATIONAL INTENSITY - NA* *ECONOMIC: EFFICIENCY* *ECONOMIC: PLOT SIZE AND SITE PLAN*	*ECONOMIC: INCREASE IN VALUE AFTER ADAPTATION *ECONOMIC: CONVERBABILITY *ECONOMIC: EXPOSURE
	SOCIAL		*SOCIAL:STIGMA-NA*	*SOCIAL: SOCIETY BENEFITS / HISTORICAL LIST *SOCIAL: DENSITY OF VALUABLE CULTURAL RESOURCES IN THE SURROUNDING / HISTORICAL LISTING *SOCIAL: IMAGE AND IDENTITY / IMAGE IN HISTORY *SOCIAL: TRANSPORTATION NOISE *SOCIAL: ACQUISITION OF CULTURAL HISTORY *SOCIAL: AESTHETIC AND LANDSCAPE/ CITY VIEW *SOCIAL: PROVIDING ADDITIONAL FACILITIES
	FUNCTIONAL		*FUNCTIONAL: FLEXIBILITY AND CHANGEABILITY- NA*	*FUNCTIONAL: STRUCTURAL GRID
	TECHNOLOGICAL		*TECHNOLOGICAL: INSULATION AND ACOUSTICS*	*TECHNOLOGICAL: ENERGY ASSESSMENT
	POLITICAL		*COMMUNITY SUPPORT AND OWNERSHIP* *RECONSTRUCTION POTENTIAL-NA*	*POLITICS: COMMUNITY SUPPORT AND OWNERSHIP *POLITICS: ZONATION POTENTIAL
	LEGAL		*ACUSTIC-NA* *ENERGY RATING - NA* *OCCUPATIONAL HEALTH, IEQ, SAFETY AND SECURITY-NA* *FINISHING STANDARD* *LEGAL: FIRE PROTECTION AND DISABLED/FIRE CODES*	*LEGAL: FINISH STANDARD *LEGAL: OCCUPATIONAL HEALTH, IEQ, SAFETY AND SECURITY *LEGAL: ENERGY ASSESSMENT *LEGAL: ACOUSTIC
	ENVIRONMENTAL		*ENVIRONMENTAL: NONE	*ENVIRONMENTAL: INTERNAL ENVIRONMENTAL QUALITY *ENVIRONMENTAL: PRESENCE OF HAZARDOUS MATERIALS (ASBESTOS)

Table 12b. SWOT Analysis extracted from ARM systems according to their suitability for Tabriz Bazaar identity

	CRITERIA		SUB-CRITERIA	MISSING SUB-CRITERIA
SWOT ANALYSIS OBTAINED FROM ARM SYSTEM	PHYSICALLY	OPPORTUNITY	**PHYSICAL: STRUCTURE - 0.85% *PHYSICAL: SERVICE CORE LOCATION- 0.85% *PHYSICAL: DEGREE OF CONNECTION TO OTHER BUILDINGS - 0.85% *PHYSICAL: FLOOR HEIGHT - 0.85% *PHYSICAL: DESIGN COMPLEXITY- 0.85% *PHYSICAL: EXPANDABILITY- 0.85% *PHYSICAL: SUSTAINABILITY- 0.85%"	
	ECONOMIC		*ECONOMIC: CURRENT VALUE - 1.44% *ECONOMIC: PLOT SIZE AND SITE PLAN - 1.44%	
	SOCIAL		*SOCIAL: NONE	
	FUNCTIONAL		*FUNCTIONAL: NONE	
	TECHNOLOGICAL		*TECHNOLOGICAL: FEEDBACK ON BUILDING PERFORMANCE- 2.47%	
	POLITICAL		*POLITICAL: COMMUNITY INTERESTS/ PARTICIPATION - 2.13% *POLITICAL: URBAN MASTERPLAN AND ZONING/ URBAN TRANSFORMATION- 2.13%	
	LEGAL		*YASAL/ İMAR: YOK	
	ENVIRONMENTAL		*ENVIRONMENT: INDOOR AIR QUALITY	
	CRITERIA		SUB-CRITERIA	MISSING SUB-CRITERIA
	PHYSICALLY	THREAT	*PHYSICAL: STRUCTURAL INTEGRITY AND FOUNDATION* *PHYSICAL: FLEXIBILITY SPACE PLANNING*	
	ECONOMIC		*ECONOMIC: CURRENT VALUE*	
	SOCIAL		*SOCIAL: NEIGHBORHOOD AND SATISFACTION* *SOCIAL STIGMA-NA*	
	FUNCTIONAL		*FUNCTIONAL: NONE	
	TECHNOLOGICAL		*TECHNOLOGICAL: INSULATION AND ACOUSTICS - NA*	
	POLITICAL		*POLITICAL: NONE	
	LEGAL		*LEGAL: FIRE PROTECTION AND DISABLED/FIRE CODES*	
	ENVIRONMENTAL		*ENVIRONMENTAL: NONE	

First of all, the flooring material and roofing system of the bazaar should be restored in terms of visual and aesthetic quality. The bazaar needs to be arranged to ensure accessibility and ease of movement for disabled people. The parking and road problem needs to be solved, and the market and its surroundings need to use urban furniture such as benches, seats, garbage bins, and lighting. The functional quality of the new organization should be increased by providing a variety of goods, entertainment, and services instead of an abundance of eating and drinking places. Likewise, it is essential to provide green areas, vegetation, and sufficient space that add a special character and natural sustainability to the market. Some parts of the bazaar can be used as a museum or exhibition area with restoration and renovation works based on cultural sustainability. Social activity areas such as children's playgrounds and recreation areas should also include social sustainability to increase social quality. To increase economic sustainability, caravanserais and hotels close to the bazaar need to be restored to their original state. It is possible to develop some projects in the bazaar to maintain its commercial importance in the future. As far as is known, it is also known that the bazaar is an educational place like a madrasah. Some art students, vocational high school students, or uneducated talented young people can be introduced to these professions through training provided at chambers of commerce and bazaars. As a result, new generations can find employment opportunities and new traders can keep the market alive. Therefore, at least the traditional handicrafts of the city will be carried to the future.

Considering the result obtained from the SWOT analysis carried out from the research to the present, it should be taken into account that the modern form and standard content of Tabriz Bazaar should be revised in terms of missing criteria due to the influence of modernism on traditional architecture, Figure 4, Figure 4a. In this context, missing criteria should be discussed in future studies as listed below:

- Economic Criteria:

- Adaptability, convertibility, increase in value after display

● Physical Criteria:

- Workmanship, deconstruction (safe, efficient, and fast), technological and convertibility, and conflict.

● Social Criteria:

- Social benefits / historical listing, density of valuable cultural resources in the surrounding area / historical listing, image and identity/image in history, transportation noise, preservation of cultural past, aesthetics and landscape/city view, provision of additional facilities/amenities, proximity, contrast or age to the factors taken.

● Functional Criteria:

- Structural grid

● Technological Criteria:

- Energy rating

● Political Criteria:

- Community support, ownership, and rezoning potential

● Legal Criteria:

- Coating standards, occupational health, IEQ, safety and security, energy rating and acoustics

● Environmental:

- Internal environmental quality and the presence of hazardous substances (asbestos)

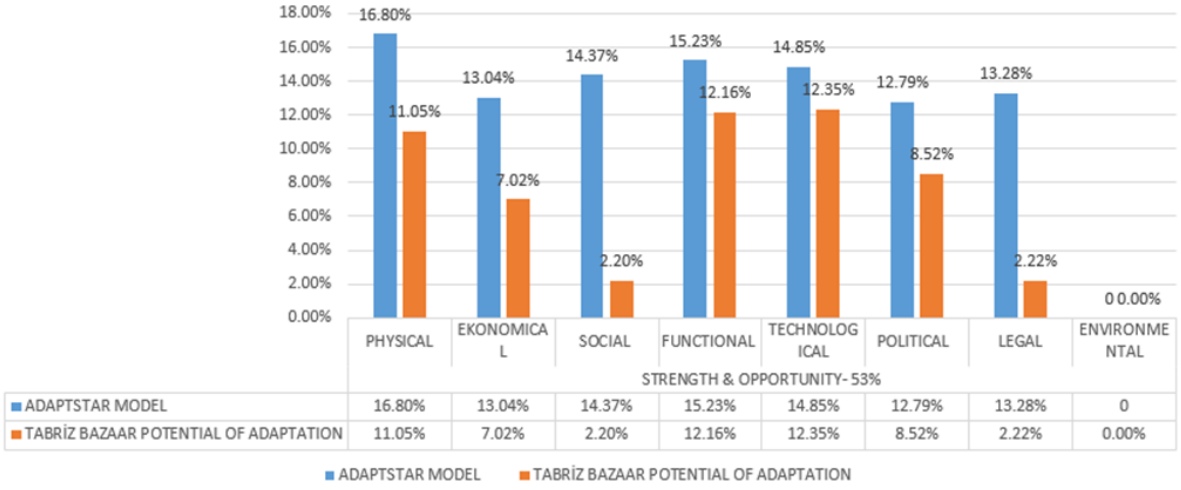


Figure 4. Tabriz Bazaar adaptation potential analysis (by authors).

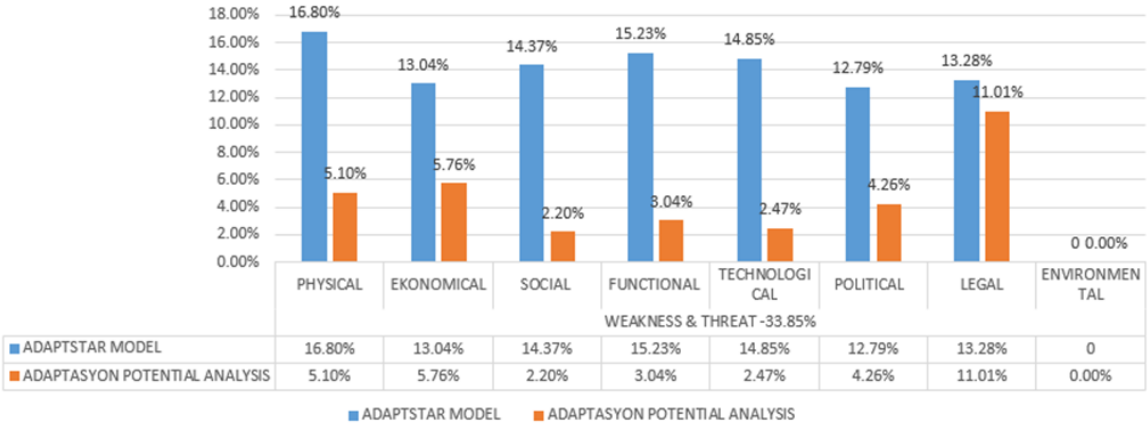


Figure 4a. Tabriz Bazaar adaptation potential analysis (by authors).

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All authors contributed equally to the article. There is no conflict of interest.

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