RESEARCH

A framework proposal for resilience assessment in traditional commercial centres: case of the historical bazaar of bursa as a resilient world heritage site

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Abstract

Throughout history, the different cycles of change that traditional commercial centres (bazaars) have undergone in different Islamic cities call attention to the hidden abilities insuring their resilience until today. To understand the way in which these bazaar areas absorb and adapt to change, this paper investigates the resilience awareness of a specific case study 'the bazaar of Bursa', by dealing with key morphological, behavioural and institutional aspects. Several resilience assessment frameworks have been developed, including cultural, economic, and spatial proxies. However, most of them have focused on physical structures while assessing resilience concretely. This study represents a first step towards a Framework Proposal for resilience assessment in traditional commercial centres (bazaars) combining together tangible and intangible features specific to the historical bazaar of Bursa as a case study using a quantitative approach in a form of a survey. The findings showed a clear overlap between the tradesmen's perception of factors affecting resilience in the bazaar of Bursa and those proposed by authors. This research may help decision-makers gain a better understanding of the key hidden factors promoting resilience in such historical urban fabrics and guide them in making adequate planning decisions in the future.

Keywords: Resilience assessment, Comprehensive framework, Resilient heritage, Bursa historical bazaar

Introduction

For centuries, bazaars have played a vital role in the blooming of traditional Islamic cities. Historically, bazaars have been recognized as being the economic heart of Islamic cities since they represented the core of regional and worldwide trade and commerce [1]. Thanks to their significant role in performing the economic, cultural, and sometimes political transformation of cities, bazaars have become the generators of urban form and the definers of urban components [2]. Bazaar is considered in different definitions as a distinct part or quality of

various civilisations. In Iran's historical centres, bazaar is similar to Plaza in pre-industrial European cities [3]. In traditional Iranian cities, the bazaar was also a core for people's social, political, cultural, and civic activities and can be comparable to the Forum and Agora in ancient Roman and Greek cities [4]. The commercial alleys that emerged in Anatolia during the Roman period continued to thrive during the Ottoman period during which, bazaars were evolved into landscapes that have not just economic or commercial aspects, but also social values [5]. For orientalists, the bazaar was the main distinguishing feature between cities in the Islamic and European worlds, while in recent theoretical frameworks, the bazaar is considered as a part of the development process, a quality rather than a physical realm [2].

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All these characteristics have combined to allow the bazaar as a living cultural heritage not only to symbolize a distinct sense of place and local identity, but also to promote economic dynamics as a vital source of city marketing and tourism [6–8]. However, the link between bazaars and cities is continuously affected by the challenge of urban transformation and new dynamics of modern life. Being an essential component for Islamic cities' physical, economic, and socio-cultural long-term sustainability, bazaars are changing rapidly as a result of globalization and fast urbanization [9]. Yet, the core of the old city centre in most Islamic cities consists of historical commercial districts that retain many of their ancient qualities [5].

Few theoretical studies have been published on the resilience in bazaars like Tabriz, Isfahan and Istanbul cities as the oldest and most famous living bazaars [10–14]. Most of the cited researches have only focused on the physical structure, while no previous study has investigated a 'Framework Proposal for Resilience Assessment' related to historical bazaars by combining together tangible and intangible features characterizing these specific areas. This fact calls attention to the necessity to explore the hidden intangible and tangible features behind the bazaars' resilience and their adaptability to change while withstanding modern life challenges. The bazaar of Bursa in Turkey is not far from these challenges. As a living World Heritage model, this bazaar has shown a considerable success in overcoming change and different historical thresholds that stimulated its dynamic adaptation. Being the first capital of the Ottoman Empire, as well as one of the five metropolises of contemporary Turkey, the city of Bursa has a rich historical and cultural heritage, and its identity constitutes both intangible and tangible qualities [15]. This indicates that Bursa bazaar has its own resilience and sustainability mechanisms, which makes us wonder;

- How this specific area managed to keep its current dynamic spatial organization, architectural identity, socio-economic features and cultural values until today?

With the intention to answer this question and to give this research a direction, an identification of the major resilience traits behind the sustainability and the vibrancy of bazaars in Islamic cities especially in the case of Bursa are implemented by adopting contemporary concepts and theories of urban resilience. Besides, this study aims to shed light on the resilience tangible indicators that underlies the long-term viability of traditional bazaars and to discuss issues related to the hidden intangible abilities that have ensured their resilience for centuries. To accomplish these objectives, this study investigates the relationship between tangible components of resilience and intangible resilience enhancing factors in the bazaar of Bursa through their verification on the ground using a survey method. This work has the potential to make a substantial advance since it will aid in the development of a concrete framework for measuring resilience in such historical areas. The framework may be applied not just to Bursa, but also to other historical bazaars where this research might make a significant contribution.

Literature review

Resilience theory emphasizes on the abilities that people and systems have which allow them to overcome adversity [16]. It focuses also on the manner in which systems may profit from disturbances that are required to boost the system's vibrancy and variety over the long-term [17]. The term "Resilience" is used differently across various disciplines and it often refers to the capacity of an entity to anticipate, resist, absorb, respond to, adapt to, and recover from a perturbation or change [18]. The resilience of a system can be defined as the ability to cope with disruptions while preserving its key functions, spatial configurations, feedbacks and identities [17]. In socio-ecological systems, the adaptive cycle established by [19] has respectively become the essential foundation of the socio-ecological resilience thinking. It focuses on the characteristic patterns that emerge from studying ecosystem dynamics, changes, and renewals [20]. Therefore, the adaptive cycle is used in modern science to describe these processes that occur on numerous spatial and temporal domains [21].

Interdisciplinary resilience assessment approaches

There is a variety of resilience studies that aim to understand the factors behind the sustainability and resilience of cities considered in the literature as intrinsically changing complex systems that have their own organization and dynamics [22]. Different proxies and parameters have been attributed to resilient cities in terms of their ability to persist, adapt and respond to disturbances [23]. However, cities that can not only adjust to shocks, but also to identify new opportunities and perform even better in the face of adversity are considered as the most resilient ones [24]. The notions of resistance and persistence of cities to change were behind the apparition of new concepts such as 'Urban Resilience' that refers to the capacity of an urban system including all of its components-throughout temporal and spatial scales- to sustain or rapidly return to main functions in the face of a disturbance, to embrace change, and to rapidly transform systems that limit current or future adaptive capacity [25]. In this regard, various researches have traced the

advances in robustness and adaptability concepts which are an integral part of resilience assessment in relation to cities [26–29]. Consequently, many key indicators have been defined as factors behind the resilience of urban fabrics namely: diversity, adaptability, flexibility, modularity, recovery, redundancy and efficiency. However, since each urban scale has unique and distinct dynamics, specific assessment frameworks must be developed to analyze different urban components.

Community resilience as an integral part of urban resilience assessment has been widely studied through various indicators namely adaptation, transformation, learning, self-organization, and acceptance of change, with the need to maintain the focus on anticipating and preparing for potential change and to consider these indicators across economic, ecological, social and institutional dimensions as the most influenced by the adaptive capacity of communities [30–32]. The investigation of the adaptive capacity of communities has revealed key abilities namely: accumulating and learning from the lived experiences, transforming this experiences into a way of learning, innovating and reorganizing resources to be able to adapt to environmental changes as required, and making a connection inside and outside the community to share experiences and lessons learned, self-organize or reorganize in the absence of leadership [21, 33, 34]. Moreover, the resilience assessment of a community has been widely linked to various capacities namely connectedness, diversity, performance, redundancy, innovative learning and institutional memory [31, 33].

Emerging urban resilience assessment frameworks

The variety of indicators included in resilience assessment frameworks reflects the diversity of theories and methodologies emerging from research in the Resilience field. These studies have tried to examine resilience from different angles and through multiple aspects. As an emergent concept, urban resilience focuses on examining how cities absorb and then adapt to change. This ability of cities to persist has been widely investigated [23, 25, 35–43] and several specific assessment frameworks such as 'Rockefeller resilience assessment' and '*100* resilient cities' have been established in connection to different criteria and urban layers [25, 40, 41, 44, 45]. For instance, scholars have suggested frameworks for assessing urban resilience mainly in Western cities, in connection to the physical characteristics of urban form [41, 44, 46–48], to the morphological and architectural features of buildings in Iranian historical city centres [14, 49–52], or even in relation to multiple urban, environmental and socioeconomic scales using mathematical approach [29]. All the preceding frameworks have concentrated on measuring or defining various resilience criteria in connection

to various scales, with little attention paid to assessing the intangible resilience promoting features, values, and behaviours unique to the historical commercial centres. Among all these studies and frameworks, the works of [53] and [44] have been chosen as a basis of this research in order to establish a resilience assessment framework that includes both local intangible criteria specific to the historical bazaar area and key tangible features to consider while assessing urban resilience.

The works of [40, 41, 44] represent almost a unique example of assessing the main resilience tangible proxies in Western historical centres related to different urban forms and scales based on a long multidisciplinary review of literature. The assessed proxies included structural proxies namely: diversity, connectivity, redundancy, modularity, and efficiency. Besides, many behavioural proxies were proposed such as: cohesion and identity, learning and innovation, flexibility, self-organization, self-efficiency, responsiveness and synergy. However, this approach mainly focused on the measurement of tangible proxies by exploring the general implications of each proxy at different urban scale without taking into consideration the behavioural side in the measurement.

The work of [51] focused on the fundamental abilities to consider while evaluating urban resilience in a specific type of resilient landscapes "the historical bazaar areas" by identifying key intangible factors that foster their resilience namely: governance, adaptability, learning from the past, long-term planning, diversity and self-organization. These baseline determinants of resilience have been gathered after a long literature review under the term 'GALLDS' which relates to the initial letter of each indicator. However, the 'GALLDS' assessment model was insufficient for measuring both intangible and tangible resilience indicators simultaneously, and seems to be much more subjective in the absence of concrete application to validate its claims. Furthermore, this model does not give a clear means for measuring relevant proxies. This study intends to refine the 'GALLDS' model by addressing its flaws, and testing it on the case of Bursa bazaar.

Methods and methodologies

In this part of this study, it is aimed to introduce the 'GALLDS' assessment framework as a significant tool to depict the hidden resilience mechanisms in historical city centres. The 'GALLDS' defined six intangible resilience proxies namely governance, adaptability, learning from the past, long-term planning, diversity and self-organization. While defining these proxies, different indicators linked to resilience assessment in the literature have been investigated. However, it did not assign a precise and concrete assessment approach. In the content of this

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paper, in order to provide such approach, the 'GALLDS' model has been improved by taking advantage of previous frameworks and researches namely those established by [40, 41, 54, 55].

The 'GALLDS': an assessment framework for traditional commercial centres

The 'GALLDS' is a vital resilience assessment tool designed for the historical bazaar areas; it explores the hidden intangible features considered in literature as key elements behind the resilience of communities and historical urban landscapes in continuous adaptability to change. The 'GALLDS' comprehensive framework presents the advantage of adding the intangible side as a key element to consider while assessing resilience in historical bazaar areas by emphasizing resilience intangible features which have rarely been treated or assessed by scholars while assessing urban resilience in such historical areas. It claims that in addition to the various tangible qualities that these traditional commercial centres posses, they have likewise their own specific intangible qualities that guaranteed their viability for centuries and enhanced their resilience to absorb the various and continuous changes [53]. The examined features are considered as key factors keeping the economic viability and attractiveness alive in most of Islamic city centres. Therefore, there is a need to improve the 'GALLDS' model in order to make it consider both tangible and intangible features, besides, specifying a measurement method or even the measurable elements that can be integrated under each indicator to be assessed in a concrete way is required.

Materials of the research

This section describes the content as well as the suggested possible 'GALLDS' sub-indicators to be measured while assessing urban resilience in the bazaar area.

Governance

Governance is considered as an important policy-making factor influencing and shaping urban resilience [56] and engaging in the dynamics of interaction between the public sector and the civil society's actors [57]. Adaptive co-management is a key part in governance theories since it engages in interconnecting old knowledge, from a variety of sources, into new paths and opportunities for practice [58] and explicitly highlights the need of combining adaptive management with institutions across scales [59]. This diversity of actors and backgrounds in governance makes for better problem-solving [60] as diversity provides more paths towards solution-finding [61]. In the particular context of the bazaar areas, the definition of governance encompasses the process of collective organization and management, formulation and implementation of policies by a group of stakeholders coming from diverse sectors such as traditional systems (Waqf, Guilds), civil society, business and government with the purpose of working together on addressing common problems.

Adaptability

Adaptability is a significant resilience indicator that refers to the ability of actors in a system to influence or manage resilience [31, 62]. Thus, resilience in this context captures the adaptive ability of a system to absorb, adjust and reorganize itself when facing change while essentially maintaining its structure, function and identity [62]. In fact, when talking about urban systems, the concept of adaptability highlights the capacity to adapt itself to external or internal changes while continuing its development within its current environment. There is a growing body of literature on the potential in combining spatial and functional adaptability and flexibility to cope with change [59, 63, 64]. For [65], the key of success in the face of an external shock is not the ability to return to an existing equilibrium, but the ability to create new pathways. In the case of the bazaar area, the capacity to adapt to different pressures is a crucial component of cultivating its own spatial and functional flexibility that can evolve into a creative adaptive ability by embracing innovation.

Learning from the past experiences

Learning in the resilience sense refers to the social and institutional learning, as in learning-by-doing [66]. Combining different kinds of knowledge can provide leading to creative problem-solving in the face of crisis and uncertainty [67]. Relatively, redundancy is one of the most vital problem-solving capacities that can characterise a resilient urban system [41]. It is what gives the system the buffer capacity to use alternative resources or paths when the principal ones are lost [68]. Redundancy includes different ways to achieve needs and can be explained with the repetition of the same elements, in order to guarantee the functionality of the systems in case of emergency events [69]. Redundancy in the bazaar area takes many forms, including the multi-functionality of space that can be adapted to change or disturbances, as well as variability because redundant spaces can absorb a variety of urban functions if necessary [70]. Many of these spaces support a variety of services, which were able to sustain the functioning of communities when conventional infrastructure failed [71].

Long-term perspectives

Long-term perspective is a strategy for increasing an area's preparedness for future occurrences or disruptions

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[56]. In this context, when it comes to enhancing long-term urban resilience in cities, connectivity emerges as a significant indicator as it helps to improve the quality of life, liveability and sustainable mobility in urban areas [72–75]. When connectivity is high in an area, the movement of people and goods is more comfortable which promotes a higher level of social and economic activities [76]. In fact, connectivity became central in resilience assessment literature [47, 77, 78] as a tool for promoting higher interaction between elements of the urban fabric, then stimulating the emergence of new patterns and functionalities [79]. One of the key indicators reinforcing the long-term urban resilience in the bazaar area can be seen most in the changing connections by either modifying their strength, nature (pedestrian-traffic or bike path) or layout (removing old connections-forming new ones) which improves continually the inter-connectivity of the area either internally or externally with its surrounding environment.

Diversity

In assessing urban resilience, the notion of diversity is often taken into consideration. The concept of diversity is strongly linked with the intense use of space in an urban area. This intensity allows a higher variety of space uses and diversity of activities leading to a prospering and successful multi-functional urban tissue [54]. Diversity spreads risks by generating redundancy, creating buffers, and opening up multiple strategies from which humans can learn in situations when uncertainty is high [80]. It plays a vital role in the reorganization and renewal processes of systems that have been disturbed [59, 81]. Diversity is thus seen as a key feature for dealing with change in productive ways [80]. In urban theory, the attributes of diversity include mixed use, short blocks, variety of building age, density, land use [40, 41], spatial heterogeneity [82], functional diversity [83–86]. In the case of the bazaar, the diversity and creative variety of both functions and building age are key factors ensuring the mechanisms of resilience over time.

Self-organization

The resilience of a system is closely related to its capacity for self-organization because nature's cycles involve renewal and reorganization [87]. Self-organization is considered as an emergent property in resilience theory [59, 88]. Several aspects of self-organization have been discussed in literature in relation to decreasing vulnerability to hazards [89–91]. However, when focusing on the social interpretation of self-organization, much social behaviour that allows a system to develop autonomously emerges, namely the sense of belonging and solidarity. The sense of belonging to a place reflects a

feeling of 'togetherness' and common destiny [92]. Traditional structures such as the Waqf and Guild systems have played a key role in maintaining these human values among traders and have been a key characteristic in the self-organization process which allowed the renewal of the bazaar area and its emergence.

Limitations of the 'GALLDS' model to assess the intangible and tangible proxies

In general, up to date, there is still no absolute agreement on the exact interpretation of resilience that should be used when assessing urban resilience. In order to fill this need, this study combines the evaluation of the essential tangible and intangible qualities with a specific resilience assessment in the Bursa bazaar by developing the content of the 'GALLDS' framework proposed by [53] with the addition of the emergent measurable resilience proxies in literature and those identified by [54] as tangible measurable proxies. This mixing might serve as a guide to help decision-makers gain a better understanding of the key factors promoting resilience in historical bazaar areas and guide them in making adequate planning decisions in the future.

In order to apply this assessment framework on the ground, this paper has used a quantitative approach (questionnaire/survey) to document and assess the urban resilience by specifically improving the ability of the 'GALLDS' model in depicting the hidden dimensions behind the sustainability of the bazaar area of Bursa (our case study) until today. In 'GALLDS' model, authors only mentioned the key features to consider in assessing resilience without clearly define a measurement approach, however there is a need to provide concrete methods which make them measurable.

An alternative approach for resilience assessment in the bazaar area

Within the scope of this study, it is attempted to develop a method for measuring the indicators defined in the 'GALLDS' framework by considering the emergent resilience indicators and their assessment methods from the literature analysis. Yet, in the content of this study, it is desired to make these proxies and other tangible and intangible indicators that can fall under measurable. To achieve this goal, different structural (tangible) proxies related to the morphological and spatial resilience in the bazaar namely: land use diversity, redundancy, connectivity and accessibility as well as the main intangible proxies linked to the behavioural factors influencing the social and institutional sustainability in the bazaar namely: belonging, solidarity, self-organization, and governance have been explored through specific questions addressed in their totality to the tradesmen in the bazaar

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of Bursa. The importance of the presented questions comes from the fact that each of the selected proxies that measure is considered in literature as a significant factor while assessing urban and community resilience.

After the determination of the proposed proxies and indicators, the validity of the produced alternative framework was investigated by the deployment of a survey aimed at assessing urban resilience in the case study of Bursa (full detailed questions and answers could be provided by authors upon request). In this regard, questions were developed to address three prime dimensions: Structural-Spatial (Morphological), Social-Behavioural and Institutional-Management scales, all of which are interconnected and meant to offer economic vibrancy and sustainability in the Bursa bazaar as a whole. A total of 30 items were presented to assess the most prominent tangible and intangible resilience sub-indicators in the literature that could be measured (Table 1).

The questionnaire includes subjective and objective questions, where tradesmen were asked about items in relation to these three main scales. Topics focused mainly on examining the various resilience proxies that contribute to the bazaars' resilience from the perspective of traders. It comprises items on various tangible and intangible traits and their pattern of use in the selected areas (Table 1). Data for this study were collected during the last quarter of *2020* from a sample of *100* tradesmen in different parts of the Bursa Covered Bazaar and Hans[1] District, namely 'Bedesten'[2] 'Havlucular'[3] 'Koza Han'[4] 'Bakircilar'[5] 'Uzun Carsi'[6] as the most famous parts of the bazaar, the rest includes different alleys and Hans of the bazaar area. The distribution of the age range is seen as < *40* (*17* persons), *41–50* (*28* persons), *51–60* (*17* persons), > *60* (*38* persons). Once collected, the questionnaire responses were factor analyzed to explore the principal factors affecting resilience in the Bursa bazaar area from the viewpoint of the tradesmen. The Factor Analyses were performed with the AMOS *21.0* software program in order to generate accurate results.

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[1] Hans or Khans (commercial buildings with courtyard, attached to the Bazaar area).

[2] Bedesten (closed form of Turkish market, more like a warehouse where goods of high value were traded).

[3] Havlucular (area of the covered bazaar where towel sellers are concentrated).

[4] Koza Han (old commercial building famous by Silk production and sales in the past, and only Silk sales in the present).

[5] Bakircilar (Zone of the bazaar where Cooper makers have been located in the past).

[6] Uzun Carsi (or Long bazaar, the oldest and the most long pedestrian street in the bazaar area).

Case study

The chosen case study for our research is the historical bazaar of the city of Bursa. Bursa is considered as an important city for the Ottoman dynasty as it was the first capital of the Ottoman Empire. Since the thirteenth century, Bursa within its bazaar has become an interesting commercial crossroad linking East to West, and taking place on the most important trade routes of Anatolia; the 'Silk Road'. The historical bazaar, being situated in the city centre of Bursa and covering approximately *46* hectares, has functioned as the heart of trade activity in the city throughout centuries [110].

In fact, the initial buildings of the area, such as the Emir Khan, Orhan Mosque and Orhan Turkish Bath, were built in the fourteenth century [111]. The area aroused the interest of merchants either local or foreign ones and led to the building of more retail units. The area continued to grow and by the sixteenth century the early growth of Bursa's historical commercial centre was complete [111]. In the seventeenth century, the area counted *3170* retail units [112] however the growth did not stop. Currently, the area comprises *3500* retail units where approximately *5000* employees and employers work. Besides, nearly *200.000* users visit the area per day for both commercial and social purposes [111].

The modern marking date was in *2014*, when the bazaar of Bursa was officially inscribed as a World Heritage Site by UNESCO. Now, it is considered as a valuable historical heritage not only in Turkey but also worldwide (Fig. 1). These facts strongly supported our choice of the bazaar of Bursa as a specific study area for our research.

Results and discussion

The quantitative data collected by the means of questionnaire, the Statistical Package for Social Sciences (SPSS) *26.0* and the Analysis of Moment Structures (AMOS) *21.0* were used for this analysis. The two main factor analysis techniques of (SPSS) namely Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed for this analysis. Both models are theoretical structures as well as data analysis techniques; both types of factor analysis are based on matrix algebra when computing their calculations. Best discussions of theoretical use, scientific context and mathematical methods are given by [113–116]. Exploratory Factor Analysis method (EFA) was carried out, from the matrices of Pearson correlation to statistically determine the construct validity of the scales. After the determination of the factor structures, the validity of the analyzed factors was discussed using Confirmatory Factor Analysis (CFA). The (EFA) method enabled the determination of the statistical measures such as Kaiser–Meyer–Olkin (KMO) and Bartlett tests that

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Table 1 Survey themes in relation to the proposed resilience sub-indicators and items in regard to the conceptual model of study
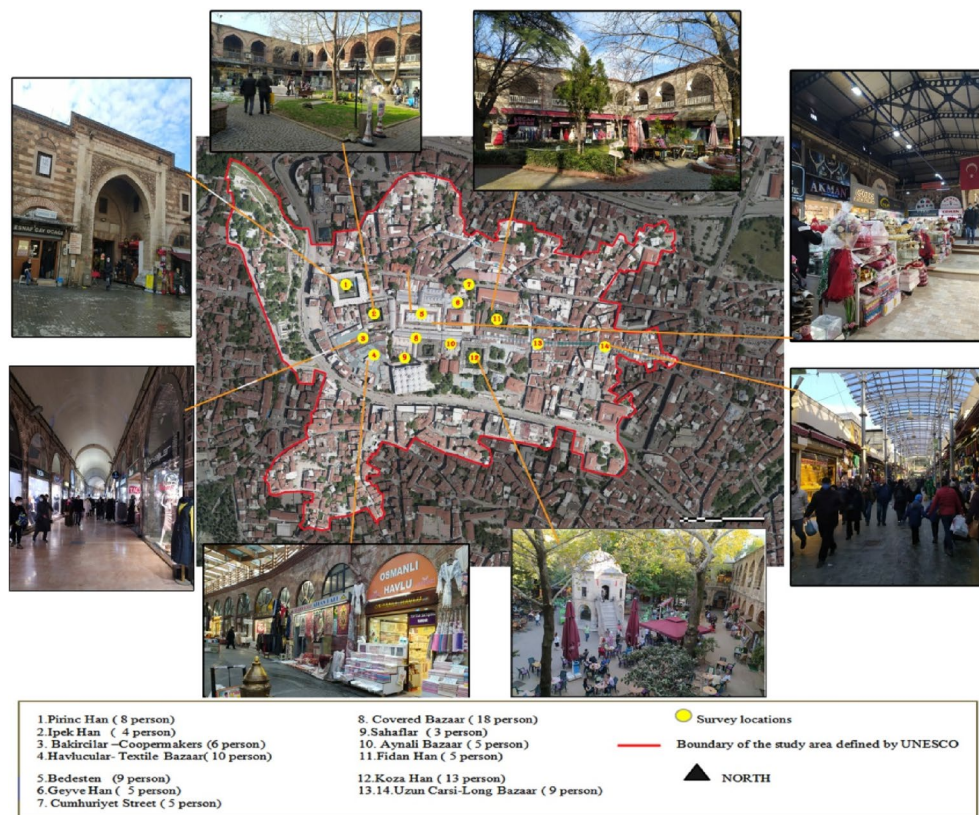
	SCALE	GALLDS indicators	The Proposed Survey Items	Resilience Proxies that Measure	Proposed Tangible and Intangible Indicators to Consider	References
Factors Behind the Resilience in the Bazaar Area	Institutional/ Management (Intangible)	Governance	-Presence of tradesmen union or Guilds in the bazaar area -Membership to Guilds or tradesmen union -The Waqf plays an important role in the bazaar area -Conservation, renewal and restoration are done by the Waqf -Conservation, renewal and restoration are done by the tradesman or Guilds	Adaptive Co-management	- Ability to reorganize - Adaptive co-management - Institutional and cultural diversity - Multilevel flexible governance - Renewel and recovery capacity	[21] [90] [87] [93] [94] [93]
	Spatial-Structural (Morphological) (Tangible)	Adaptability	-Total activity period -Activity period in the sector -Period spent in the shop -Changes made in the shop -Kind of changes made in the shop -Previous activity in this shop -Kind of building in which the shop is located	Adaptive Capacity	-Flexibility - Spatial and functional adaptability - Spatial Adaptive Reuse	[89] [95] [81] [63] [59]
		Learning From The Past	-Type of alternative routes-streets leading to the shop - Number of alternative routes-streets leading to the shop - Presence of another branch of the shop - Location of the branch if exists	Redundancy	-Degree of internal variability, as well as functional duplication Multiplicity of: -Main routes -Main urban support services	[96] [42] [97] [41, 55]
		Long-Term Perspectives	-The area is sufficiently accessible by public transport -Easy arrival of goods to the shop -The proximity to public transport stations increases my business	Connectivity-Accessibility	-Spatial communications in terms of the level of integrity and continuity of roads Richness of: -Accessibility -hierarchy -Urban complexity	[42] [98] [99] [100] [41] [29]
		Diversity	-Type of activity - Factors that threaten the activity - Factors that threaten the bazaar area	Land Use Diversity	Rich spatial distribution, Diversity of: -Busnissess -Institutions -Functions -Land use -Forms	[101] [30] [102] [29] [103] [104] [41, 55]

Table 1 (continued)

SCALE	GALLDS indicators	The Proposed Survey Items	Resilience Proxies that Measure	Proposed Tangible and Intangible Indicators to Consider	References
Social-Behavioural (Intangible)	Self-Organization	-Birthplace of trader - Age of trader - Ownership status - Lodger status - Partnership type - Number of generations in the sector -There is a strong relation-ship between tradesmen of same street - Competition and similar activities reducethe business	-Sense of Belonging -Sense of Solidarity -Equity	Social attachment: -Sens of place, -Identity - Viable social relationships, -Passing on professions between generations	[105] [106] [92] [107] [108] [109]

Source: Authors

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Fig. 1 The UNESCO delimitation of the Bursa Bazaar and Hans District within the survery localisations. Map Source: Adapted from Bursa Metropolitan Municipality *2021*-Photo Source: Authors *2022*

determine whether the scales were suitable for factor analysis. To assess the sample size, the KMO coefficient was calculated. In Table 2, a strong KMO equal to *0.915* indicated that sampling is adequate to assess the factor-ability of the data and that factor analysis is useful for the variables. KMO value varies from *0* to *1*. The KMO values between *0.8 to 1.0* indicate that the sampling is adequate. Values between *0.7 to 0.79* are middling and values between *0.6 to 0.69* are mediocre [117, 118]. Moreover, a significant Bartlett's test of Sphericity with a significant value (p < *0.05*) indicated that factor analysis may be worthwhile for the dataset of our study [119, 120].

In order to identify the dataset's suitability for factor analysis, sample size and the strength of the link between the items should be examined [117, 121]. To identify the strength of the relationship among the items, the correlation matrix must provide evidence of a coefficient of correlation greater than *0.3* [122]. In this study, Correlation analysis showed that there is no item with low value in the scales (correlation > *0.300*). In addition, item-total correlations and Cronbach's alpha reliability values were investigated in the case of item deletion.

Cronbach's alpha (reliability factor) was employed in the internal consistency analysis [123, 124]. Cronbach's alpha coefficients were calculated for each factor with its items, Confirmatory Factor Analysis (CFA) was implemented using AMOS and results indicated that the reliability level of scales was quite high with a value of *0.714* (Cronbach Alpha > *0.600*) (Table 3).

Findings in Table 3 showed that the Structural-Spatial (Morphological) factor loadings consisted of *3* items ranging from *0.815* to *0.758* with a variance rate of *24.720%*. The second Management-Governance factor loadings consisted of *3* items ranging from *0.854* to *0.734* with a variance rate of *24.455%*. While the last Social-Behavioural factor loadings consisted of *2* items ranging

Table 2 KMO and Bartlett's test results

KMO and Bartlett		
KMO		*0.915*
Bartlett	X^2	*233.291*
	p	***0.000***

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Table 3 Cronbach alpha for internal consistency analysis and factor distribution

Scale	Item	Factor Loading	Ratio of Variance	Cronbach Alpha
Structural-Spatial (Morphological)	The area is sufficiently accessible by public transport	0.815	24.720	0.716
	The proximity to public transport stations increases my business	0.764		
	Easy arrival of goods to the shop	0.758		
Management-Governance	Conservation, renewal and restoration are done by the Waqf	0.854	24.455	0.712
	The Waqf plays an important role in the bazaar area	0.762		
	Conservation, renewal and restoration are done by the tradesmen or Guilds	0.734		
Social-Behavioural	There is a strong relationship between tradesmen of this street	0.881	20.340	0.747
	Competition and similar activities reduce my business	0.858		
Total			69.515	0.714

Table 4 The association between scale scores

		Social	Management	Spatial	Scale Total Score
Social-Behavioural	r	1	0.171	0.267**	0.628**
	p		0.088	0.007	0.000
Management-Governance	r		1	0.255*	0.702**
	p			0.011	0.000
Structural-Spatial	r			1	0.758**
	p				0.000
Scale Total Score	r				1
	p				

**p < 0.01, *p < 0.05 significant association, p > 0.05 no significant association, Correlation coefficient power levels; 0 < r < 0.299 weak, 0.300 < r < 0.599 mid, 0.600 < r < 0.799 strong, 0.800 < r < 0.999 very strong; p = Pearson product-moment correlation, r = the empirical robustness of the Pearson correlation

from *0.881* to *0.858* with a variance rate of *20.340%.* One item with overlapping problem in the Management-Governance factor and other item in different dimension in the Structural-Spatial factor were removed from the scale.

For the correlation and reliability analysis, the Kurtosis and Skewness values obtained from the scale scores between + 3 and − 3 are considered sufficient for a normal distribution [125–128]. The association between three very different important agents of influence on resilience were analyzed: Social-Behavioural, Management-Governance, Structural-Spatial (Morphological). Based on the factor analysis results, the average values of the related questions were used while calculating the sub-dimensions and total scores. Pearson correlations were used to analyse the validity of the scale and quantify the degree of association between the studied scales. A perfect connection would have a Pearson correlation matrix of *1.0*, a slope of *1.0*, and an intercept of *0.0* [129]. The diagonal element of the matrix has always the value 1 (i.e., the correlation of a variable within itself).

Depending on the results of statistical analysis, there was a significant association between the studied scales. The total score values were computed by taking the average values of the valid scales' related questions (Table 4).

The Structural-Spatial scale with Social-Behavioural scale's score has a correlation value of (r = *0.267*) with a scale total score of (r = *0.628*) which reflected a positive, statistically significant association between the scale total (p < *0.05*). The Structural-Spatial scale with Management-Governance scale's score showed a correlation value of (r = *0.255*) with a scale total score of (r = *0.702*) which indicated that there was a positive, statistically significant association between the scale total scores (p < *0.05*). There was appositive correlation between the Structural-Spatial scale's score (r = *0.758*) and the scale total score, which represented a positive, statistically significant association between the scale total scores (p < *0.05*).

As a result of this correlation analysis, there were no items with low factor loadings (β > *0.300*), and all items were significant for the factor analysis (p < *0.05*) (Table 5). Factor analyses were re-applied to the remaining 8 items

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Table 5 Scale item and factor distribution

Scale	Question	β	Std.E	t	p
Social -Behavioural	Q2	0.733			
	Q1	0.814	0.407	2.799	**0.005**
Structural-Spatial(Morphological)	Q9	0.618			
	Q8	0.613	0.240	4.533	**0.000**
	Q7	0.798	0.294	4.544	**0.000**
Management-Governance	Q5	0.559			
	Q4	0.791	0.332	4.216	**0.000**
	Q3	0.691	0.303	4.402	**0.000**

β: factor loading($β > 0.300$), Std.E = standard error(the standard error depicts the variation (change) of the mean in a distribution; it lowers as the number of samples increases)

to examine the resilience indicators that were resulted in three valid scales. For these new factor analyses, reliability statics, KMO and Bartlett's test calculations were repeated in regard to extracted set of items. These new analyses also indicated sufficient aggregate variance to use factor analysis. Data analyses were established by SPSS *26.0* software program and studied with *95%* confidence level. Frequency (n) and percentage (%) were given for categorical (qualitative) variables, mean value (X) was given for numerical (quantitative) variables, standard deviation (Std.d), standard error (Std.E), minimum and maximum statistics were given. Pearson correlations, an independent sample t-test and ANOVA test were used for data analysis.

To determine the suitability of the questionnaire tested in the Confirmatory Factor Analysis (CFA), the conformity indices were calculated by (CFA). The results of the calculated indices namely the 'Absolut Fit' that measures how well the suggested model matches the observed covariance (RMR, GFI, RMSEA) and the 'Incremental Fit' that performs a comparison of the proposed model to a realistic null or baseline model (AGFI, NFI, TLI CFI) were met within acceptable limits (Table 6). The (CFA) analyses for scale

validity were carried out using the AMOS *21.0* software program.

To determine the number of significant factors, the scree plot test was employed. Factor analysis in this process resulted in three valid factors. The examination of the scree plot showed a factor distribution with an Eigen value greater than *1*, it indicates *3*. Since the structure of the scale was suitable for *3* factors, the first part of the analysis was continued on *3* valid factors (Fig. 2).

In order to illustrate the empirical possibilities of the measurement of the 'GALLDS', three variables were selected. These examined variables seem to have a potential influence on urban resilience according to the literature. Objective and subjective questions have been established according to *3* scales. Each scale contains selected items that are strong among others characterizing a resilient urban system; then the connectivity-accessibility (through questions *7,8,9*) have been chosen as a significant indicator enhancing the spatial resilience in the bazaar area. Among the human values and behaviours strengthening the social resilience in the bazaar of Bursa, the sense of solidarity among merchants has been evaluated (through questions *1,2*). Management-Governance as a significant resilience indicator in the bazaar has been assessed in relation to the role of the Waqf system as the promoter of economic sustainability and the most important traditional model of co-management in the bazaar area (through questions *3,4,5*) (Fig. 3).
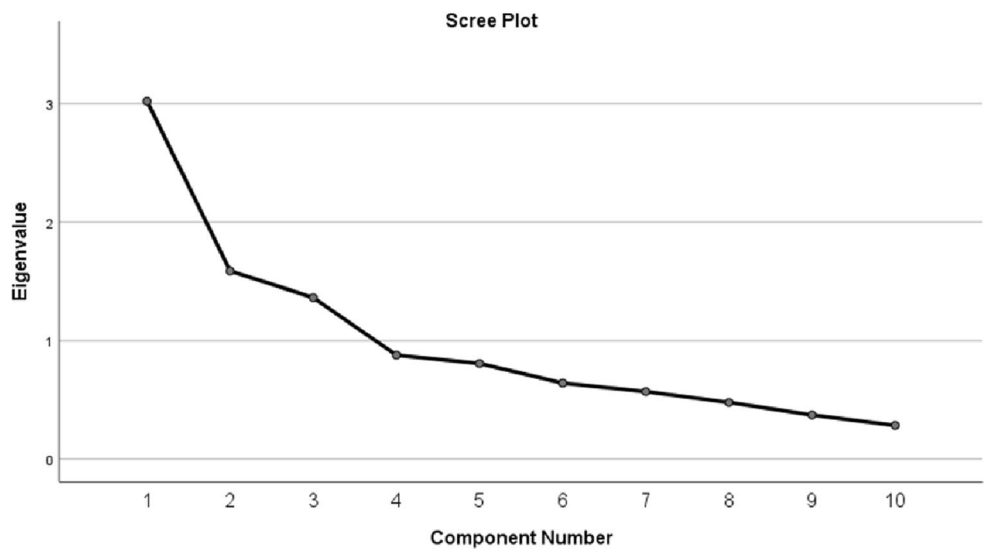
Governance

The resilience of the built fabric and the continuity and stability of the urban process in the bazaar of Bursa remained almost efficient during centuries and depended to a large degree upon the dual role of social institutions represented by the Waqf and Guild systems as a key promoter of urban and socio-economic resilience. Focusing on the Guild system, this traditional institution has assured governance for centuries by ensuring social equity, solidarity, and co-management in the bazaar area.
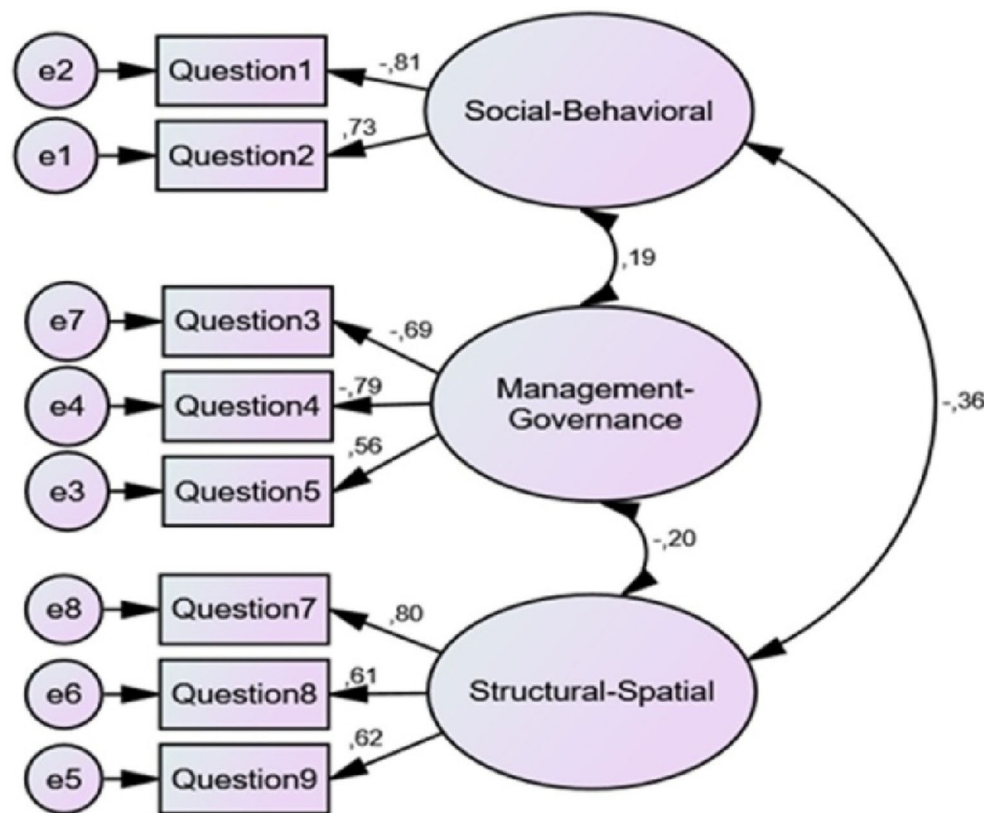
Table 6 The cut-off value for evaluating each Fit in literature

Fit	Recommended values	References
Root Mean Square (RMR)	< 0.10	[130]
Goodness-of-Fit Index (GFI)	> 0.90	[131]
Adjusted Goodness of-Fit Index (AGFI)	> 0.80	[132]
Normed Fit Index (NFI)	> 0.90	[133]
Tucker-Lewis Index (TLI)	> 0.90	[133]
Comparative Fit Index (CFI)	> 0.90	[134]
Root Mean Square Error of Approximation (RMSEA)	< 0.05 (good) < 0.08 (acceptable) < 0.10 (mediocre)	[135, 136]

Source: Authors

Fig. 2 Scree plot of factor distribution

Fig. 3 CFA Path Diagram of three factors of resilience established with AMOS *21.0*

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The multiplicity of the roles played by the Guilds is explained by the diversity of functions that they possessed, whether administrative, fiscal, social or even economic [137]. Each of them was organized according to well-defined cultural customs and intangible rules, transmitted orally from one generation to the next. In addition to their social and administrative functions, the main concern of the branches of Guilds was to take responsibility for developing a mechanism of self-control between merchants and the organization of economic relations between traders. In several particular trades, it was usual that stores or workshops were grouped together in the same location. These clusters appear in the form of an assigned sector in a specific area, street or a neighbourhood.

Thus, the main objective of Guilds was to protect the same professions from the possible illegal competition which could exist between them. Besides facilitating supervision and control, this spatial and professional grouping raised the sense of cohesion and solidarity that have been guaranteed between traders thanks to many unwritten rules and customs continuing until today. For instance, merchants would position a chair in front of their shops to symbolize that they had not yet had a client, which was one of the most humanitarian and kind traditions about the first customer's first gain. As a result, when nearby merchants noticed that their neighbour has not yet gained, they claimed that the desired goods were unavailable and redirected the clients to the neighbouring store as a noble practice to share the benefits. Other example of these living customs can be seen in the organization of outdoors collective meals (Iftar) in the bazaar streets during the fasting month (Ramadan), which deepens merchants' relationships and sense of community.

Due to the fast changes in contemporary and political life, new governance systems were established in the Bursa bazaar area today (municipality, local authorities etc…). However, these changes appear to be required since one of the beneficial methods to shape resilience over time is to allow changing kinds of governance [56]. Yet, the traces of the Guild system, which adapts itself to the contemporary conditions of the day, continue to exist today as an organization of merchants under the name of the Union of Bursa Historical Bazaar and Khans' District. This organization ensures both the regulation of the relations among the merchants, and the relations between the local administrations and the merchants and the participation of the merchants as decision makers in the transformation process. In this context, the survey results showed that *0.87%* of the tradesmen approved the presence of the Union in the bazaar of Bursa, *0.75%* of them had a membership to the Union, which reflects

Table 7 Distribution of information on the structural indicator of adaptability through the sub-indicators of flexibility and renewal

Assessing adaptability through flexibility and renewal		n	%
Total activity period	10 years and below	20	20.0
	11–15 years	15	15.0
	16–20 years	10	10.0
	21–40 years	34	34.0
	40 years and above	21	21.0
Activity period in the sector	15 years and below	19	19.0
	16–20 years	26	26.0
	21–40 years	24	24.0
	40 years and above	31	31.0
Period in the shop	10 years and below	22	22.0
	11–15 years	14	14.0
	16–20 years	13	13.0
	21–40 years	29	29.0
	40 years and above	22	22.0
Changes made in the shop	Done	58	58.0
	Not done	42	42.0
Kind of change made in the shop	Decoration-Renovation	56	96.6
	General	1	1.7
	Other	1	1.7
Previous activity	Same	39	39.0
	Other	61	61.0
Kind of building	Historical building	100	100.0
	New building	0	0.0

the survival of this ancestral tradition of Guilds that has guaranteed the continuity of socio-economic sustainability in this district.
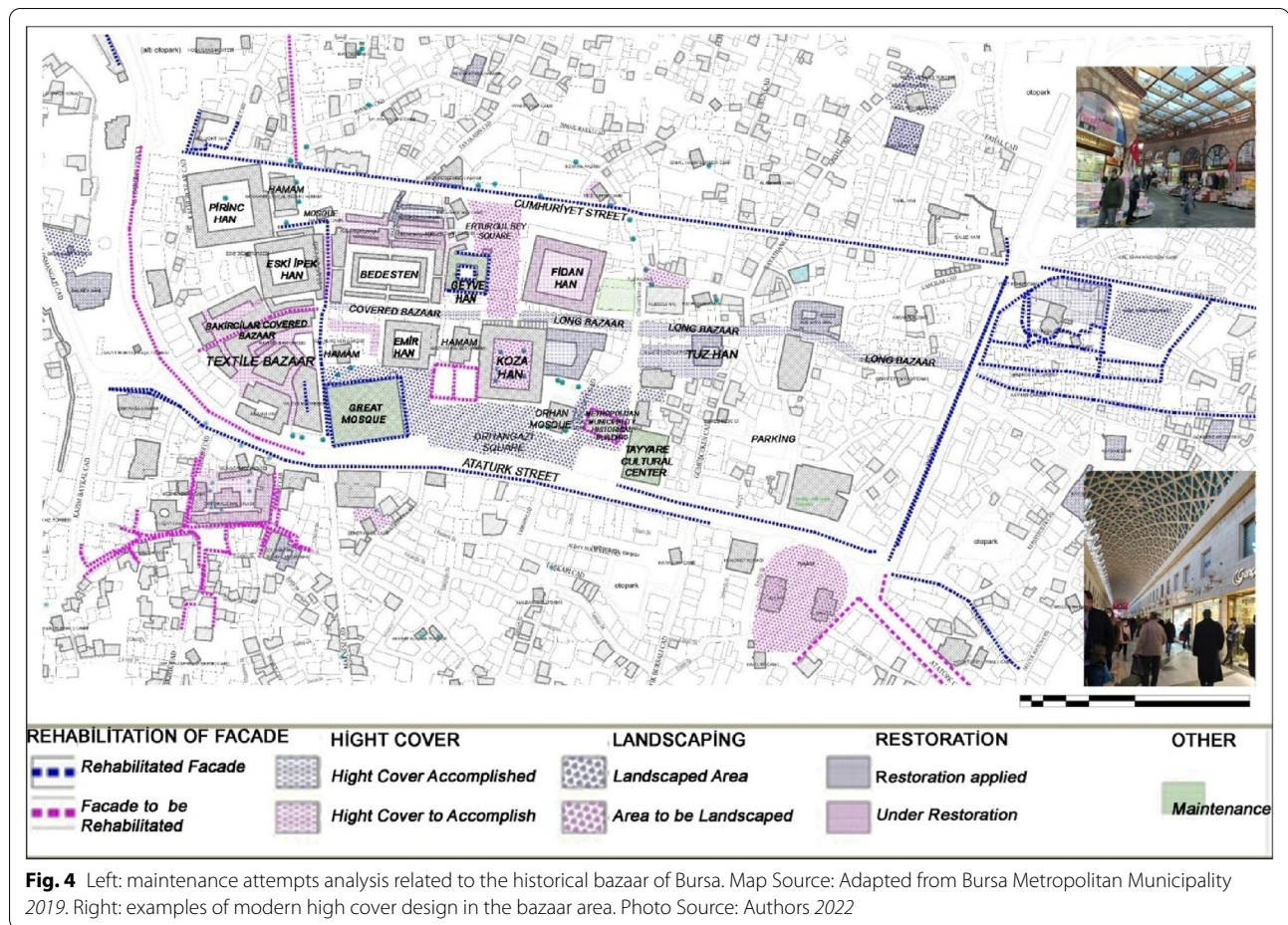
Adaptability

The continuous flexibility in replacing activities as required in the bazaar area enhanced a remarkable capacity of adaptability and resilience to sudden change or disturbances, which helped this area to persist for centuries.

Findings in Table 7 showed that the overall activity period revealed that *34.0%* of the tradesmen had exercised for duration between *21* and *40* years, while *21.0%* had worked for more than 40 years. This extended period of trading activity could explain the high degree of skill, competence and adaptive capacity possessed by more than *50.0%* of the merchants surveyed.

The high sectorial flexibility that has distinguished the Bursa bazaar for centuries continues to shape the bazaar's identity and adaptability. It could be noticed in the percentage of tradesmen that have made changes in their shops (*58.0%)* or even in their activities (*61.0%*). The cause of *96.6%* of modifications implemented in shops has been defined as decoration and renovation repairs; even though most shops were located in

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Fig. 4 Left: maintenance attempts analysis related to the historical bazaar of Bursa. Map Source: Adapted from Bursa Metropolitan Municipality *2019*. Right: examples of modern high cover design in the bazaar area. Photo Source: Authors *2022*

historical buildings, the nature of businesses was constantly changing to meet the new necessities of modern lifestyle. This adaptive change tendency is backed by the fact that *61.0%* of activities have been replaced by new ones, reflecting a sense of renewal while adapting to new living conditions and rapid societal changes in the investigated sectors.

Another factor that has contributed to the bazaar's overall survival and physical flexibility and renewal was the participation of local authorities in managing and conserving the bazaar area via the use of continual repairs and rehabilitation efforts that have previously been made mainly by the Waqf system. The evaluation of the role of the Waqf system as a significant promoter behind managing and conserving the bazaar area showed a lower distribution with low mean value (see Table 9). It can be explained by the decline in the role of the Waqf in managing the bazaar affairs at the present time compared to its active role in the past.

Today, the maintenance role that has been exercised by traditional institutions (Waqfs) has been transmitted to local authorities and new institutions which have

the same goal of safeguarding this historical area while adapting itself to continuous change (municipality and other local authorities, craftsmen's room and union of tradesmen in Bursa) (Fig. 4).

Learning from the past

The past experiences lived in the bazaar of Bursa have formed a kind of learning and enough consciousness to anticipate the worst, in this regard, redundant street network was a creative problem-solving that made the bazaar area survive in the face of crisis and uncertainty.

Given that redundant street networks allow for the optimization of more efficient pathways via secondary paths, the results in Table 8 agreed with the redundant street networks concept. Findings showed the presence of many alternative ways and routes connecting each shop under investigation with the rest of the bazaar area (*85.0%* of shops were accessible by more than one alternative route). This network redundancy broadens the choice of destinations available to each shop, as well as their interconnection both internally and externally. For centuries, the rich secondary paths and variety of

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Table 8 Distribution of information on the indicator of learning through the sub-indicator of redundancy

Assessing learning capacity through redundancy		n	%
Type of alternative routes-streets leading to the shop	More than one	85	85.0
	One way	12	12.0
	Labyrinth	2	2.0
	Impasse	1	1.0
Number of alternative routes-streets leading to the shop	2	13	14.9
	3	28	32.2
	4	26	29.9
	5–6	20	23.0
Another branch of the shop	Yes	43	43.0
	No	57	57.0
Location of the branch	On the same street	13	30.2
	In another street	20	46.5
	In the city	9	20.9
	Abroad	1	2.3

main commercial alleys that characterised Bursa bazaar have facilitated the circulation of people and goods and attracted a higher intensity of social and economic activities. Furthermore, findings revealed that functional redundancy was an important problem-solving strategy in the Bursa bazaar; *43.0*% of merchants had a second branch of their shops, and *30.2*% of the secondary branches were located on the same street comparing to *46.5*% of branches that were in other streets of the bazaar, in another part of the city (*20.9*%) or abroad (*2.3*%); this multi-functionality of space has ensured the adaptation to continuous changes that affected the bazaar which made easier the functionality of the bazaar as a whole in case of emergency or crises. These findings supported those revealed by the

survey related to the modal proposal for the Bursa historical bazaar management plan established by [138] which was administered to a far larger number of merchants. In terms of functional redundancy and secondary branches, almost half of the *470* businesses who answered did not have a branch, while the other half did. The great majority of branches were in the bazaar area, either on the same street or in various zones of the bazaar.

Long-term perspectives
Connectivity and accessibility represented one of the most important long-term urban interventions implemented in the bazaar district of Bursa.

The evaluation of items for the three valid scales as shown in Table 9 were measured by a five-point Likert scale, ranging from strongly disagree *(1)* to strongly agree (*5*). Additionally, item no *6* that has an overlapping problem and item no*10* that was in different dimension were removed from the scale. Results showed that the structural-spatial (morphological) items related to the connectivity and accessibility has the highest distribution since their mean value was remarkably higher than the other items.

The high mean values of the Morphological scale indicated that tradesmen were aware of the importance and effects of the connectivity-accessibility on the prosperity of their business. Various urban interventions have been established in this historical area to adapt it to the new needs required by modern lifestyle responding then to the modernization of the Ottoman Empire. All the previous interventions had the purpose to enhance the internal connection of the bazaar area as well as its connection with the adjacent urban environment. For instance, the
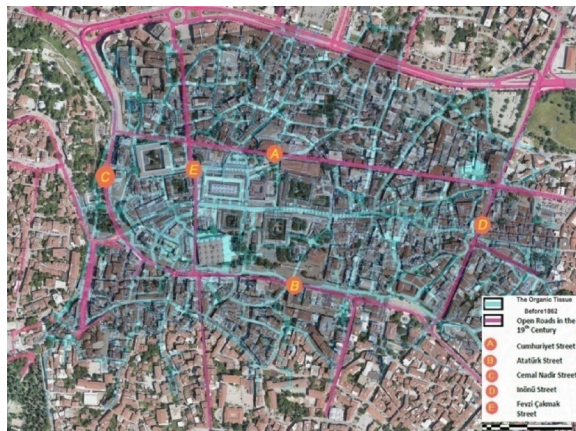
Table 9 Distribution of participation levels regarding scale expressions (*1*: strongly disagree,*2*: disagree,*3*: neutral,*4*: agree,*5*: strongly agree)

Items	1	2	3	4	5	mean	Std.d
Social-Behavioural 1. There is a strong relationship between tradesmen of this street	9.0	16.0	12.0	30.0	33.0	3.62	1.33
2. Competition and similar activities reduce my business *Management-Governance*	28.0	33.0	10.0	22.0	7.0	3.53	1.30
3. The Waqf plays an important role in the bazaar area	15.0	19.0	20.0	33.0	13.0	3.10	1.28
4. Conservation, renewal and restoration are done by the Waqf	17.0	17.0	33.0	26.0	7.0	2.89	1.18
5. Conservation, renewal and restoration are done by the tradesmen or Guilds *Structural-Spatial (Morphological)*	20.0	37.0	19.0	17.0	7.0	3.46	1.19
7. The area is sufficiently accessible by public transport	11.0	7.0	6.0	46.0	30.0	3.77	1.26
8. Easy arrival of goods to the shop	12.0	18.0	5.0	43.0	22.0	3.45	1.34
9. The proximity to public transport stations increases my business	10.0	5.0	7.0	45.0	33.0	3.86	1.22

Item 6. 'The impact of the facade improvement Works on the business' and item 10.'The variety of transportation used to reach the shop' items were removed from the scale
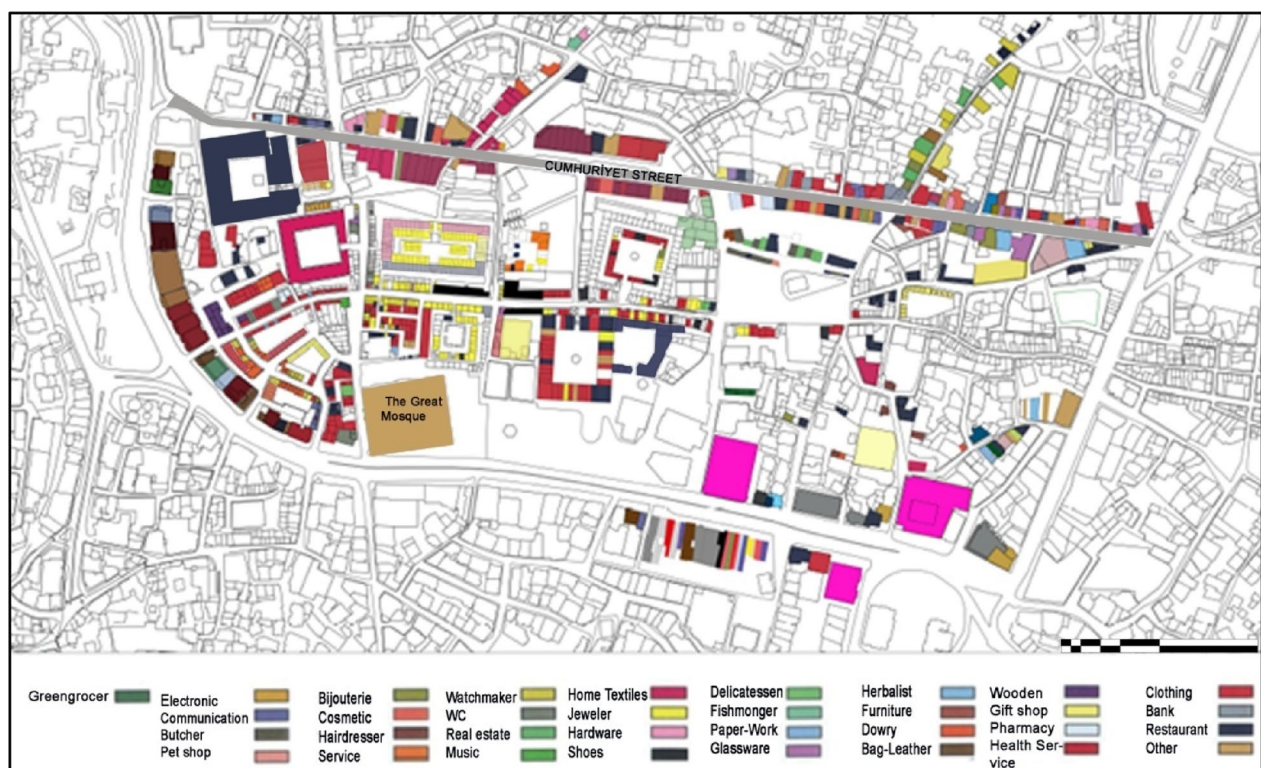
Std.d, standard deviation of Likert scores

Fig. 5 The evolution of Bursa bazaar morphology from an organic tissue before *1862* to an axial path during the 19 h and twentieth centuries shown on recent map of *2021*. Source: Authors

opening of the 'Cumhuriyet Street' in the nineteenth century and then its pedestrianization in *2011* have represented significant examples of the long-term planning strategies in the bazaar of Bursa. The impact of these urban interventions may be seen in the ease of access to both shops and the bazaar area. (According to the survey results, *38.0*% of tradesmen used their personal vehicles,

38.0% used public transport, *2.0*% used motor or bike and *22.0*% of them preferred walking). Until today, the 'Cumhuriyet Street' within the open roads in the nineteenth and twentieth centuries continues to provide a high spatial connection and accessibility to pedestrians and vehicles as an important street network intervention. As a result of this evolution, the organic structure of the area has given way to axial roads and has become more accessible and connected to the city (Fig. 5).

Diversity

Bursa has a greater bazaar compared to other cities thanks to its location alongside the most important trade routes: the 'Silk Road'. The spatial organization of the commercial structures in the historical bazaar of Bursa reflects an urban development approach specific to Early Ottoman cities. This district includes traditional Ottoman style commercial buildings, like Khan, Bedesten, Covered Bazaar and open bazaar areas and does not include residential area inside the district [139]. Throughout history, diverse sectors meeting the daily life needs have been hosted in the historical bazaar of Bursa. These sectors varied from potters, shoemakers, fabric manufacturers, leather crafts...etc. However, due to changing lifestyles and the need to adjust to different demands,

Fig. 6 Land us diversity in the bazaar of Bursa. Source: Authors *2020*

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some sectors have evolved or been replaced by new ones (Fig. 6). Among the various activities and sectors subject of this survey, we can notice the richness of land use that includes clothing (*27.0%*), home textiles (*23.0%*) and jewellery (*12.0%*). Besides, different other sectors like floristry, currency exchangers, carpet maker, gift shops, paperworkand bookstore, mercers, furniture, optician, retail trade, watch making, tailoring and glassware stores were among the questioned sectors in this survey.

For instance, the leather crafts and cooper makers sectors have been replaced by new ones such as watch making, jewellery, apparel and exchange offices to meet the modern life needs. This flexibility in evolution and adaptability of land use highlights the strong and resilient character of this historical area. Which means that Bursa bazaar is not at its final stage; instead, it is changing and will keep evolving thanks to its resilient landscape. Nonetheless, various difficulties and circumstances are prevalent and endanger both the diversity and viability of activities and sectors. From the point of view of merchants, *36.0%* of them consider the increasing prices as a threat, while *50.0%* of them claim that foreign competition and imported goods are the most perilous threat that can negatively affect their activities. When we investigated about the causes affecting the bazaar area as a whole, we were told that the tragedies wrought by previous fires had not yet been eradicated from the traders' collective memory (Fires in *1402, 1413, 1491, 1493, 1512, 1518, 1519, 1521, 1544, 1584, 1589, 1608, 1723, 1729, 1743, 1755, 1757, 1765, 1767, 1770, 1771, 1773, 1855, 1863, 1870, 1889, 1904, 1922, 1927, 1958, 2015*), which explains the fact that *45.0%* of merchants put fires in the first place as a major danger threatening the bazaar area in its entirety. These risks identified by merchants from many sectors can assist local authorities in making decisions to promote the bazaar in terms of preserving activities, enhancing land use variety, and averting multiple hazards that might damage the entire bazaar area.

Self-organization

For centuries, certain human qualities and social behaviours including solidarity and strong sense of belonging have been attributed to the resilience and sustainability of the Bursa bazaar. Despite the commercial competitiveness, more than *60%* of tradesmen acknowledged to excellent neighbourliness, solidarity and unity (see Table 9). Likewise, findings showed that a strong sense of belonging is a crucial social resilience enhancer among traders. The accompanying table aimed to assess the sense of belonging as a vital booster of self-organization in the bazaar area (Table 10).

According to the results presented in Table 10, there are two key factors behind the high sense of belonging

Table 10 Distribution of information on the social indicator of self-organization through the sub-indicator of belonging (behaviour)

Assessing self-organization through the sense of belonging		n	%
Birthplace	Bursa	79	79.0
	Other	21	21.0
Age	*40* years old and under	17	17.0
	41–50 years old	28	28.0
	51–60 years old	17	17.0
	Over *60* years old	38	38.0
Ownership status	Own property	28	28.0
	Shared property	7	7.0
	Lodger	65	65.0
Lodger status	Private property	40	61.5
	Public property	2	3.1
	Foundation property (Waqf)	21	32.3
	Mixed	2	3.1
Partnership type	No partnership	48	48.0
	Not family member	2	2.0
	Family member	50	50.0
Number of generations in the sector	*0*	26	26.0
	1	56	56.0
	2–3	18	18.0

in the Bursa bazaar. The birthplace of the *79.0%* of the questioned merchants, Bursa, could explain the first factor of this belonging; thus, belonging to the city of Bursa has played a crucial role in the continuity of *56.0%* of them in their commercial sectors for at least one generation, while *18.0%* of traders born in Bursa have been in the same sector for two or three generations. This passing down of skills and expertise from generation to the next has been one of the most essential factors in fostering a sense of belonging to both the profession and the bazaar area among tradesmen from different ages. The ownership status revealed that *65.0%* of merchants were lodgers, compared to *28%* who owned their own property and *7%* who shared their property. A further major reason explaining the high sense of belonging in the Bursa bazaar is the rate of family partnerships. According to the findings, *50%* of merchants had strong partnerships with family members, which led to a greater performance in the organization. The main benefits of these family partnerships- even if the trader does not own its property- can be seen in the increased solidarity and ease of self-organization during economic crises. Furthermore, family partnerships continue to play a significant role in enhancing the opportunity for traders to financially

develop their own trade and deal with any unexpected disturbances.

Conclusion

Promoting resilience in historical bazaar areas requires a conceptual planning with a holistic approach. Sustainable urban planning and careful vitalisation should take into consideration the key hidden factors behind resilience in such historical areas. The outcomes of this research have highlighted that the analyzed resilience tangible indicators and sub-indicators have played a significant role in enhancing the value of the cultural landscape and urban resilience in the historical bazaar of Bursa namely the adaptive capacity, diversity, redundancy and connectivity. In addition, the hidden intangible factors behind the community and social resilience of this area are found to be strongly related to the governance values of the traditional institutions (Waqf and Guilds) transmitted from the past. Furthermore, non-tangible features and behaviours namely the sense of belonging, self-organization, solidarity and equity as well as beliefs, local traditions, community values, culture and aspirations, are widely being recognized as key components of urban heritage preservation and vitalisation. This means that preserving and regenerating such historical tissues entails more than simply material spatial protection and restoration to better anticipate or manage future and unexpected events or change.

The findings revealed that resilience in traditional commercial centres is a combination of community, social and urban resilience, allowing this study to serve as a first step toward developing a multi-dimensional evaluation model that considers the institutional, morphological and behavioural scales. The first institutional scale permits us to study the community resilience within the evolution of the co-management institutions in the bazaar over time. This understanding can be possible by taking advantage of traditional governance systems (Waqf, Guilds) to develop others adequate for future change. The second scale is related to the spatial-structural and morphological capacities. It includes the aspects of adaptability, learning, long-term perspectives and diversity. Adaptability reflects the key mechanisms behind the sustainability of the whole bazaar until today through the flexibility and renewal capacities. An innovative learning from the past experiences can be reflected by the decisions concerning long-term urban interventions and perspectives namely interventions related to enhancing connectivity, accessibility or redundancy. This Learning capacity contributes to better anticipate or manage future and unexpected events ensuring then the unchangeable identity of the bazaar area as a whole. The analysis of the functional diversity and socio-economic heterogeneity characterizing the bazaar area facilitates detecting the ideal land use diversity needed to deal with possible change that could affect different commercial sectors. The third studied scale focuses on social-behavioural factors, it includes the main behaviours and human values namely the high sense of solidarity and belonging that affects positively the process of recovery while preserving its own identity, especially the self-organization and protection mechanisms which can guarantee the viability of the bazaar area in the present and future. However, these findings might not be representative of all bazaars as this research was limited in terms of a study area that only included the Bursa bazaar as a specific historical tissue of the region. Besides, this study has only surveyed a specific target audience which is tradesmen while including bazaar customers and visitors may broaden our understanding of factors behind the resilience of such historical area.

In general, this study may be used as a solid foundation in the urban realm toward transforming the resilience assessment theories into an operational tool for policy and management purposes in the bazaar areas. It may play a significant role to guide policymakers and urban planners while making decisions, future interventions or prospective changes in the bazaar area without affecting its identity, vibrancy and attractiveness. The investigation of the conspicuous morphological, social and management capacities included in the 'GALLDS' framework opens other research paths to explore resilience in the historical landscapes namely the bazaar areas where most of them are living heritages in need for comprehensive planning policy for the long-term care. Besides, further research on the dynamics between the analyzed resilience enhancing factors needs to be done since most tradesmen gave them a primary importance as it can be noticed in the survey results. This study may also open several doors for research and application on other bazaar areas and why not comparative studies between bazaars of the same country or between ones from different countries worldwide.

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Declarations

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