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## A Structural Analysis of the Effective Components on Resilient Space (Case Study: Tabriz Historic Bazaar Complex)

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Raheleh Abdollahi<sup>1</sup>, Islam Karami<sup>1\*</sup>, Ahad Nejad Ebrahimi<sup>2</sup>, Leila Rahimi<sup>3</sup>

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1 Department of Architecture, Ardabil Branch, Islamic Azad University, Ardabil, Iran.

2 Faculty of Architecture and Urbanism, Tabriz Islamic Art University, Tabriz, Iran

3 Department of Architecture, Faculty of Civil engineering, University of Tabriz, Tabriz, Iran.

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### Abstract

Nowadays, spaces designed without considering context are vulnerable against change. So research into how contextual components and spatial capabilities influence the continuity of spatial vitality has shaped central issue of study, which conducted using a combined research method with data collection tools through a questionnaire, observation, and documentary studies. Based on the results, bazaar status in terms of resilience is at a favorable level, and there is a significant relationship between contextual components and spatial capabilities with spatial resilience, and the most significant effect of contextualism on resilience is through spatial capabilities. Thus, the indirect effect of contextualism is more significant than its direct effect. Environmental and cultural context and adaptive and reactive capabilities have the most impact, and physical context and flexible capability have the least impact. Therefore, the contextual space, over time can be achieved to resilience by maintaining its cohesion and through improving capabilities and resilience strategies to cope with disruptions, and continued its physical, functional, and semantic vitality.

**Keywords:** contextualism, spatial capabilities, resilience, Tabriz Historic Bazaar, path analysis

\* Corresponding author

Email: Architect\_ik@yahoo.com

**Expanded Abstract****Introduction**

The term resilience has been investigated for decades in a wide range of studies in order to describe how different types of systems and environments respond to unexpected shocks, mostly addressing the subject of sudden disturbances such as natural disasters and their effects on the systems. However, limited studies have been examined the effect of slow disturbances. It is worth noting that in today's societies, the resilience of built environments has an active role in a city's resilience, and the life of each city depends on the life of different spaces and environments located in it. In fact, the spatial dimension of resilience is a new subject in the field of architecture which indicates the continued vitality of spaces over time against gradual and slow disturbances. Today, the spaces that are constructed without reading the context and suitable response to it are vulnerable to shocks and changes, and lose their efficiency quickly. In this regard, attention to spatial features and capabilities, although contributing to resilience to change, is not sufficient by itself to examine the subject; hence, the harmony of space with the context and utilizing the components of context are of utmost importance and contextualist approach can lead to valuable results in this field. Therefore, the purpose of the research is to identify effective components with an emphasis on contextualist approach. For this purpose, the historic bazaars of Iran have been determined as the identifiable spaces for exploration, and the historic bazaar of Tabriz was chosen specifically as the case study. It is important to evaluate this bazaar due to its special cultural, social, and economic role as well as its high cultural-religious value in people's mental structure and the need to protect the country's cultural and architectural heritage as the largest covered bazaar. Thus, this research seeks to answer the following questions:

1. What is the level of resilience of Tabriz historic bazaar from the perspective of contextualist approach?
2. Which components and indicators play an effective role in achieving this resilience, relying on this approach?

**Materials and Methods**

This is a case study that contains the basic theory to guide the research process. In this research, contextualist approach was used as the basic theory to formulate the research method. This research employed a combination of quantitative and qualitative methods that have been performed with the aim of identifying and searching for the factors of resilient spaces.

From the theoretical aspect, in the first step, the different views and theories related to contextualist approach were obtained by meta-analysis method and the physical, historical, environmental and socio-cultural components of context on which there was a scientific consensus were also extracted. Contextualism is an approach that is formed by paying attention to the set of physical and non-physical values in an environment. Considering these components and coordinating with the context will lead to the continuity of values; longevity of vitality and high adaptability of spaces; and thus the resilience against change and evolution over time. The present study, in the physical context investigated the integration and coherence of structure, function, and also vision. The cultural context was dealt with the conformity with religion, values, beliefs, meaning and also the association of the spatial organization with Iranian lifestyles. In the historical context, the use of historical types of architecture, relationship with the traditions and visual and collective memories and in the environmental context, the adaptation to weather conditions such as environmental comfort, climatic adaptation and respect for environmental capacity were considered. Then, in the second step, by analyzing and discussing resilience issues from the perspective of adaptive resilience approach, the characteristics of adaptability and reactivity as effective strategies in the resilience of spaces were extracted. By analyzing the spatial dimension of resilience, two characteristics of flexibility and variability were deduced as decisive capabilities for resilience of systems aimed at understanding and proving the research problem. Based on the foregoing, in this study, four capabilities were defined representing the resilience of spaces.

In adaptive capability, the ability to adapt to variables and new conditions were considered. In reactive capability was investigated the coping strategies or in other words, spontaneous resilience of users.

Indicators of these two capabilities are reconfiguration, reorientation; growth, local attractiveness, access, attribute interaction, interaction of components and features, experience and awareness, programmed and spontaneous reaction, self-organization, and social system diversity. Based on the findings of the previous studies, some indicators have been introduced to measure flexibility which include polyvalence, fluidity, diversity, the flexible of institutions and networks in decision-making and problem solving, the sense of belonging, and optimal fit mass into space. Considering the theorists' views on the indices of change of patterns and processes, the spatial-temporal activity chain, trusted partnerships, social networking, and users' ability to modify structures to measure the capability of spatial variability were discussed in this study. As a result, theoretical framework was accomplished by extracting the components of context and spatial capabilities based on the findings of the studies.

From the operational aspect, the components of context as an independent variable, spatial capabilities as a mediating variable, spatial resilience as a dependent variable and individual factors as a controlling factor were considered in this research. In order to collect data, library study and field methods were used. Quantitative data collection tool was a questionnaire based on the research variables and demographic characteristics of the respondents with 69 items to evaluate the views of the clients of Tabriz historic bazaar and the tools for collecting qualitative data included direct observation and documentary studies on environmental variables. The target population of this study was selected by Cochran sampling with 95% confidence level constituting 357 individuals. Cronbach's alpha coefficient was used to estimate the reliability of the questionnaire. The obtained value was 0.899; accordingly, the research tool can be considered appropriate and the results reliable.

Quantitative data analysis was carried out through mean test, structural analysis and multivariate linear regression and using SPSS and LISREL software. In order to explain the present situation, prioritize and rank the components and indices, t-test and box plot diagram were employed. Path analysis was employed to find out the relationships between the variables and their direct and indirect effects. Regression analysis was also used aimed at investigating the relationship between the indicators and variables. Inductive reasoning strategy was employed to analyze the qualitative data. Finally, by comparing the results of quantitative and qualitative data, the indicators of spatial capabilities and contextual components affecting resilience were analyzed and categorized.

### Discussion of Results

In line with the purpose of the research, the findings showed that among the individual factors, three factors of age, level of education and economic status affect the level of contextualism. According to the results of the mean test, the resilience of the historic bazaar of Tabriz is at an optimal level based on the spatial capabilities and contextual components, and the historical context and flexible capability are at their best. The results of structural and regression analyses indicate that there is a significant relationship between all variables of the research. According to the results of path analysis, all the governing relationships in the structural model are significant. In this regard, in contextual variable, the highest path coefficient belongs to socio-cultural and climatic-environmental component (0.70). The lowest path coefficient belongs to physical component (0.52). In the spatial capabilities variable, the adaptive and reactive components have the highest path coefficient (0.77). Therefore, there is a direct and significant relationship between the capabilities of space and the components of context with spatial resilience. And the most significant effect of contextualism on resilience is through spatial capabilities; thus, the indirect effect of contextualism on resilience is more significant than its direct effect. So, the environmental and cultural contexts and the adaptive and reactive capabilities of space have the most impact.

A comparative study and analysis of the quantitative and qualitative findings of the present study showed that the contextual space of Tabriz bazaar has been able to maintain its coherence in the perceptual, semantic, visual, functional and structural components over a long period of time, without losing its identity against the disorders, and continue its physical, functional and semantic vitality. The operational findings on the capabilities of the resilient space are in agreement with the theoretical findings. In addition to the indicators in the theoretical findings, other indicators were identified as effective factors in the continuity of vitality in this study, such as increasing new units, physical

permeability (multiplicity of accesses), network communications of space, social security, the planned strategy of global bazaar registration and its effect on increasing users' presence, and multifunctional space. Therefore, using the capabilities of space, the contextual space can survive over a period of time without losing its identity by maintaining performance.

### Conclusion

In this research, first the relevant and effective factors of context were identified and then the spatial capabilities influencing the subject were extracted from the adaptive perspective and spatial dimension of resilience. The theoretical framework of the research was also investigated. In the sample, the mentioned factors were tested quantitatively and qualitatively. The results of the questionnaire and field and documentary studies showed that the resilience of Tabriz historic bazaar is at a good level, and the historical context and flexible ability are at their best. There is a direct and significant relationship between the contextual components and spatial capabilities with resilient space. The most significant effect of contextual components on spatial resilience is through spatial capabilities. The conclusion to be drawn is that the indirect effect of contextualism on resilience is more significant than its direct effect. The environmental and cultural context and the adaptability and reactivity of space, and the physical context and flexibility of space have the most and least impact, respectively. Therefore, the physical, cultural, historical and environmental components of context as the primary and the most influential factors on the continuity of spatial vitality, and the capabilities of adaptability, reactivity, variability and flexibility of space as inherent potentials or resilience strategies and mediating factors of resilient bazaar are considered important.

Therefore, the contextual space over time can lead to the continuity of spatial vitality by maintaining its semantic, perceptual, visual, functional, and structural coherence. Also, achieving resilience which reflects the continuity of life, is the result of increasing the capacity of space to deal with crises which is provided by factors such as the capabilities of adaptability, reactivity, variability, and flexibility of space to improve the existing conditions.

To put its short, the components of context, in conjunction with the spatial capabilities, leads to the resilience of space. However, the purpose of this research was to identify the causes and not to design strategies within the scope of this research and developing it requires further research. It can be concluded that considering the conditions of the context and these capabilities over time can be a good step towards improving the status of resilient space. One of the achievements of this research was to present the factors that promote the spatial resilience which can lead to a new method of designing spaces and assessing the strategies of resilience to promote urban resilience.