

Explaining the Position of Mid-Spaces in Improving the Functional Efficiency of Commercial Centers in Qazvin (Case study of Alborz, Abadgaran and Mahestan Commercial Centers in Qazvin)

Abstract

Architecture in commercial spaces plays an imperative role in potential success. Functional efficiency in the interior spaces of commercial centers is one of the most important criteria that guarantee the success of commercial complexes from an economic point of view. The distribution of interior spaces, taking into account the relationship between them, is one of the factors affecting the spatial configuration characteristics of commercial centers and their functional efficiency. The purpose of this study is to investigate how space organization of commercial centers, intermediate spaces can improve the functional efficiency of the complex. The statistical population in this study is three commercial centers in Qazvin, which have been studied based on two variables "location" and "occupancy rate" of mid-spaces. The measurement tool for analyzing the performance of commercial centers is the spatial syntax technique. In this field, spatial relations have been studied by using graphs, mathematical relations and space syntax software. The strategy used in the research will be quantitative. By evaluating the obtained information, a suitable model was obtained to determine the position of the mid-spaces in order to improve the functional efficiency of commercial centers and increase the social communication of users. Findings of the research indicate that the research can be an effective guide in the process of designing business centers and explain the effective factors in order to analyze the social logic governing these centers.

Research aims:

1. Reading the space organization of selected commercial centers based on the position of the mid-space in the city of Qazvin based on the space syntax technique.
2. Explaining the optimal model in terms of how the mid-spaces in commercial centers are located in order to improve the functional efficiency of the complex.

Research questions:

1. How can the element of mid-space as one of the main elements in the physical-spatial structure of commercial centers affect the improvement of its functional efficiency?
2. Considering the two indicators of "occupancy level" and "location" of mid-space in commercial centers, which mid-space pattern creates a more appropriate functional efficiency?

Keywords: Business Center Architecture, mid-space, functional efficiency, space layout, Qazvin City.

Introduction

In contemporary times, commercial centers in addition to economic features have a social and cultural role in urban spaces. This is a reason for the emerging trends in interior design in order to organize shopping malls and to design a favorable shopping center in the existing competitive environment. The development of the interior design of shopping centers is based on the principle that by designing and organizing movement routes and taking advantage of visual and psychological effects, it is possible to guide buyers during shopping activities and provide them with the highest satisfaction. This in itself leads to the highest performance returns because the buying process implies a deeper and more comprehensive meaning of buying and selling based on the system of supply and demand. According to this understanding, commercial complexes become spaces for social gatherings in which people gather to spend their leisure time and promotes social interactions. In general, spatial configuration is the relationship between at least two spaces in any building design, which shows how people face interior spaces in terms of behavioral patterns and positioning of interior spaces and can ultimately lead to a change in the nature of spatial relationships and thus this provides a new definition of spatial utility. Accordingly, business centers create and use interface spaces in line with their intended purpose

and function. Social meanings occur in interior spaces and the use of space depends on the relationships between people in business centers. Functional relationships are created between spaces that reflect the presence of human beings, which includes how intellectual patterns are formed in line with social meanings in relation to interior spaces. One of the most important achievements that defines the characteristics of a desirable society is the way spaces are organized in order to achieve human goals. If the spatial configuration of an environment is based on components affecting functional performance, the functional behavior of that environment will be predictable in order to achieve the desired environment. In practice, the efficiency of a business center is the viability of the building in accordance with its functions, which is in line with achieving a set of homogeneous functions and not just economic performance. A business environment is efficient for users and buyers when it can engage them in a variety of activities without subjecting them to unpleasant experiences. If space users are assumed to be the main elements in defining the structure of the environment, then they can be imagined in the social-physical system of the environment at the center of a multilayered structure of interface spaces. These interface spaces provide a simple and balanced movement for the buyer, by enabling the user to watch all the spaces that from the formation of visual points (spatial separation) to attractive points following a slow passage from beginning to end. In the defined traffic routes, it forces that this possibility can be a positive factor to improve the efficiency of shopping malls. When a space has extensive spatial connections to other spaces in a complex, the amount of access and usability of the space for users increases, with intermediate spaces providing this ease of access for users. Therefore, in this study, it is attempted to address the role of the middle space as an interface between the entrances and commercial spaces on the one hand and to improve the efficiency and productivity of commercial centers on the other hand.

The study of the research background shows that so far, no research has been done to explain the pattern of the middle space in order to improve the functional efficiency of commercial centers by relying on the technique of space syntax. However, some research has been done in areas related to functional efficiency. Mustafa et al. (2013) in a study, considering the central courtyard as a variable, has conducted research in order to achieve the desired productivity in various models of residential houses in Erbil, Kurdistan. Khan (2012) has studied the patterns of medical centers and has extracted the explanatory indicators of functional efficiency in inpatient wards of medical centers. In a study conducted by Kiai et al. (2017), the role of the courtyard in improving the

functional quality of the mosque has been evaluated according to its location, and by using the method of space syntax and mathematical relations, the functional efficiency in space is studied in effectual models. In the field of locating the yard in the pattern of mosques has been achieved. In another research study by the same researchers (2017), a research on the position of porches in mosques in order to improve the functional efficiency of mosques took place. Masoudinejad (2016) has categorized Iranian markets from the perspective of structural and social diversity and by using the syntax of space, unique descriptions of the Iranian market have been challenged.

In the present research, a descriptive-analytical method has been used to evaluate the data and analyze the spaces. The type of argument used in data analysis is inferential and deductive. For this reason, the variables "extent of the middle space" and "its position" in the spatial system were introduced as independent variables and functional efficiency of the middle space of the dependent variable. In line with these goals, effective indicators on the functional efficiency of business environments have been extracted, which ultimately has led to the formation of a theoretical research framework. The second stage includes the introduction of case studies that in this regard, three commercial centers were selected from the shopping centers of Qazvin, which are different in terms of the location of the middle spaces and the level of occupation, and then the explanatory charts for each selected sample are formed. From the analysis of these diagrams, information such as how the spaces are distributed, the depth of the spaces, how the space is configured and how the communication between the micro-spaces can be extracted. In the next step, in order to achieve the desired level of efficiency, the mathematical relations of the syntax of space, which is one of the proposed solutions, is used. The data needed to apply these relationships are obtained by analyzing the results of the graphs. These mathematical relationships calculate the relative correlation, the relative symmetry of space, the average depth of space, the functional efficiency of an environment, and show the differences in the design of space based on the various configurations of space. Depthmap software has been used to show the degree of interconnectedness of the spaces that is related to the permeability index and the connections in the space that show the readability of the set.

Conclusion

Regarding the level of occupation, it was concluded that considering the results of the evaluation of the sections related to "connections" and "depth", it seems that with the expansion of

intermediate spaces and its area in the space organization of commercial centers, this element in the role of an intermediary space has appeared and by being located between the entrance space and commercial spaces (shops), it facilitates access and proper spatial circulation in the complex. As area expansion in the complex increases, the depth of space, the amount of permeability and flexibility of the spaces increase in order to make the commercial complex more general strengthens. In the location section, by evaluating components such as "integrity", "spatial difference" and "depth", it was determined that if the interconnectedness of spaces in the business complex increases, spatial segregation will reach its minimum. As observed in the data analysis section, if the middle space such as the main lobby of the complex is located in the main axis of the entrance and in the direction of the geometric elongation of the complex and can provide a variety of services to integrate or separate the surrounding spaces according to user needs, the functional efficiency of the set increases. The mere presence of the middle space at the entrance does not have a significant effect on improving the efficiency of the complex, but the placement of the middle space and its elongation in the geometric direction of the complex and access to all single commercial spaces (shops) to the middle space by creating functional differentiation, possibility of using different areas increases by buyers and enables social connections to benefit from a variety of functions. This pattern also increases users' visual communication with commercial spaces by creating integrated spatial connections (ring structure) and decreasing spatial depth, and expands the visual depth of the collection by removing uniform interior walls. Therefore, in the best possible case, the middle space extends from the main entrance lobby to the threshold of the last commercial spaces of the complex, and by creating a favorable spatial circulation, appropriate permeability and increasing flexibility in the spatial-functional organization of commercial complexes, creates the highest functional efficiency. Therefore, it seems that the results of the present study can be used in the spatial layout model in the design of commercial centers. The configuration pattern of commercial spaces can be organized in such a way that by placing intermediate spaces and increasing and expanding them in the spatial structure of commercial centers as a spatial interface, users' social interactions in how to use the space and efficiency improved the performance of business suites.

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