Extraction an Evaluation of Physical-Behavioral Components taken from Native Patterns (Case Example: Kerman Bazaar Complex)

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Research Article

Abstract

The formation of the body of any space can be derived from the prevailing behaviors and diverse lifestyle patterns and the physical support of the type of space from specific activities or diverse uses. Each space has a different meaning that emerges based on the body that surrounds it. Traditional markets as the support of commercial centers have components that are derived and show the physical design and spatial behavior that are directly related. This research was formed with the aim of extracting physical-spatial components and classifying them in the markets of Kerman.

The research method is a combination of nested qualitative and quantitative type. In the qualitative part, semi-structured interviews with scholars and snowball sampling are used, in which 28 experts are interviewed. In order to reduce the data, coding is used in ATLASTI software. It is a causal-comparative quantitative method that uses the components of the previous stage to develop a questionnaire and distribute it among 384 space users. The results are entered into the GRAPHER 16 software for analysis and are analyzed with inferential statistics. The results show that the most important factors in the body-behavior components in the formation of the traditional market of Kerman city include the response of the wise in the form, the support of the body to the activity, the cover Plant is with a value of (1.000) and the lowest factor contribution is related to inviting elements with a value of (0.295). Also, all the components have a significant relationship to explain

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the factor contribution, except for the flooring component, whose factor contribution is (0.467) but it does not have a significant relationship. To facilitate the review of the results, a summary chart of the determined coefficients has been presented.

Keywords: Phyical-Behavioral Components; Native Patterns; Kerman Market Collection; Combined Method

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1. Introduction

In the last century, man has assumed himself to be in control of the environment he creates and has forgotten that he is surrounded by the environment. That is, the environment he is shaping surrounds and encloses him (Shahcheraghi and Bandarabad, 2017: 16). By using the knowledge of environmental psychology, it is possible to make an assessment before design and construction, which is considered the best tool for professional designers. If we know what has performed better in the past, for better design in the future. We will be more prepared. Also, this science can be used in the investigation of historical architectural works and the analysis of the impact of mutual relations between man and the environment in traditional architecture and use the advantages of such science in knowing these places (Pakaz, 2006: 398).

Today, the architectural community aims to heal the lost hope in today's architecture by looking at the past in its designs, because the dullness of modern designed spaces indicates that traditional architectural elements and methods have been a more suitable answer for users. In the studies conducted on native architecture, culture, climate, and people are important factors that shape this type of architecture, which fulfills the relationship between man, environment, and nature in the best way. In modern constructions, we have started to design with complete disregard for the climate, culture, and needs of the users and we have faced the failure of the project. The relationship between man and the environment has been studied in many domestic and foreign researches, which have been explored in various locations such as residential, commercial, neighborhood centers, etc. It considers it necessary to create a stable behavior place, in the current research, shopping centers are chosen as the research platform for the shopping component, which is a requirement for the presence of every person in the society.

Today, in most of the contemporary commercial spaces, we witness the dullness and inefficiency of the space, on the other hand, the valuable historical market, which has a rich body, is devoid of social presence or a place of presence and trade of foreigners and foreigners, which causes the loss of the original identity. It has become a historical market. Kerman Bazaar, one of the historical markets of Iran, which has two axes, east-west and north-south, has suffered functional decline and lack of identity in the north-south axis, which prompted the researcher to examine the physical and social factors in the axis East-West, which still retains a part of its identity, is a model for the development and revitalization of historical markets that have lost their identity, or in future researches, to seek to formulate commercial space design criteria. With the aim of extracting body-behavior components derived from native architecture, this research tries to answer the question what are the physical components affecting spatial behavior in the architecture of the traditional bazaar of Kerman city and which one has a greater contribution?

2. Theoretical Foundation

2.1. Local Architecture

The word "indigenous" is derived from the Latin vernacular and means "native, indigenous, from the region". This word is probably derived from an old Etruscan word (Iranmanesh et al., 2014: 352). In linguistics, this term refers to the term "mother tongue", which is a language belonging to a specific time, place, or group (Dost Mohammadi et al., 2021: 16). In architecture, it is attributed to a style of architecture that is native to a specific time or a specific place (not imported or copied from another region). This architectural style usually refers to residential buildings (Khaleghi, 2019: 25).

Today, native architecture is considered as a vessel and a legacy of the past, the legacy of uneducated people who used architectural elements to create architecture (Flamaki, 2005: 12). Native architecture means a collection of architectural and urban planning units that have come together in the land and with coordination in the field of shape, volume or "volunometric plan" in the field of applications, coloring and composition of full and empty surfaces, as well as in the field of materials and all building systems that are in It is the main element of the phenomenon. (Falamaki, 2005: 17). Native architecture is a usable example for sustainable architecture due to popular construction technique and collaborative construction patterns (Akrami and Damiyar, 2016: 38). Vernacular architecture is the wise thinking of a generation shaped by the culture of a particular region in which it flourished. Native design is the crystallization of limitations imposed by regional and cultural guidelines in the puzzle of a region. Or somehow, teaching to live with these limitations by using the maximum potential power is considered a canvas; Therefore, native architecture is the result of the factors that shape it (Akrami and Damiyar, 2016: 34).

Vernacular architecture mainly refers to a type of architecture that originates from informal local traditions and is not expressed by a specific designer. Native architecture is a type of architecture that is formed based on the needs of users and reflects local traditions (Alpagonolo and Flameki, 2015: 36). Vernacular architecture is formed based on the needs of the residents of a region and the limitations of the climate (Tabatabai and Sabernejad, 2015: 70) and its related technologies play the highest influence in the issue of sustainability due to attention to the background and context of design (Jafari and Mahdavipour, 2013: 51). Vernacular architecture is an architectural style that is formed based on local needs, availability of building materials, and local traditions. At least in the beginning, there was no formal education for people and it was implemented only by relying on local design skills and the tradition of local builders (Khaleqi, 2019: 25).

Gibson (1979) relates the concept of environmental capability to some of his previous concepts. As Kafka (2009) also believed; Objects have a requesting or inviting quality, for example, according to Louis Kahn, a brick wants to be an arch. So; It turns out that in order to design a space or live in it, one cannot ignore its behavioral and functional background. In this context, Flameki (2015) states:

"Native architecture means a collection of urban architectural units that have come together in a certain land and have harmony based on difference, identification based on rules and customs and tastes born from environmental culture and... and unwritten but living contracts". Native architecture has evolved over time based on the environmental, cultural, technological, and historical background in which it has existed, and it has been randomly put together with elements of design style for aesthetic purposes that go beyond the essential needs of the building (Flameki, 2014: 28).

2.2. Environment and Behavior

John Lang also expands the knowledge of the behavioral environment and tries to build a theory based on behavioral studies for the design of human-made environments. According to John Lang, the main indicators of the behavioral realm are: a pattern of behavior that is always repeated and a platform with a sense of the special presence of that behavior and its co-construction means the appropriate link between the behavioral pattern and that context of a specific time frame, in other words, equal to this definition, if permanent and different behavioral patterns appear in a specific behavioral context at specific times, that environment It is considered as a separate behavioral camp (Lang, and Guba, 2000: 128), this view of Lang can be seen.

It can be classified into three groups, each of which requires different characteristics in the physical environment, essential activities, optional activities and social activities, and compulsory activities, a person is forced to perform these activities in any situation. Because such activities are mandatory. It accepts the least impact from the material environment and public space because it is done on all days of the year and under any conditions. If the external environment has a low quality, people will only do the necessary activities; And where the quality of space is high, in addition to doing essential activities, their desire to be in the environment and prefer walking to fast passing by car increases. Voluntary activities, such activities do not have a vital aspect and are carried out in conditions that provide a favorable environment for them, such as recreational activities, and social activities, performing these activities depends on the presence of other people in the space, and basically, they are not possible outside of a collective form; Like play, children meet neighbors and gain locality (Gehl, Gemzoe and Kirknaes, 1987). Yan Gel knows the amount of these activities in the environment and urban space in relation to their quality.

2.3. Relationship Between Behavior and Environment (Ecological Psychology)

Experts in the definition of the environment, between various words; Physical environment, social environment, psychological environment, and behavioral environment are distinguished. For this reason, architects, psychologists, sociologists, and geographers provide different definitions of the environment according to their needs. "Environment is a complex concept, which has various dimensions. Spatial data, social, cultural, physical, architectural, symbolic, geographical, historical and biological aspects are considered important aspects of the environment" (Lawrence, 2005: 102).

Therefore, the environment (space) is like a container for the social activities and behaviors of citizens. Human spatial behavior, from the perspective of urban design, is a concept that describes the relationship between the built environment and the people living in it. "Good" spatial behavior is an indicator of successful urban design, while "bad" spatial behavior can be an indicator of wasted resources and the reason for residents' dissatisfaction. Therefore, behavior is a kind of language to communicate between humans and their tangible environment (Ferguson and Derek, 2016: 199).

In traditional psychology, psychologists relied on the general issue of human behavior and did not pay attention to the relationship between human behavior and the environment. The consequences of neglecting the effects of the environment on behavior and the emergence of modern architectural movements criticizing the boring, crime-prone, and unpleasant spaces formed in modern cities became the basis for the emergence of environmental psychology. Environmental psychology is a way to understand the relationship and two-way interaction between humans and the environment. Because he believes that none of these two cases can be investigated alone. For the first time, Roger Barker and his colleagues defined the interaction of the two fields of

behavioral sciences and architecture as "environmental psychology", which seeks to translate the relationship between humans and the environment into the language of architecture and environmental design. By analyzing and investigating this relationship, the environment can be designed according to people's needs and characteristics (Schaumann et al., 2016: 26).

The background of "environmental psychology" dates back to the late 20th century. Proshansky, Etelsen, and Rivlin announced the emergence of environmental psychology in a book entitled "Environmental Psychology: Humans and the Socio-Physical Environment" (Einifar, 2015: 45). The following table shows the definitions of environmental psychology by experts:

Table 1 Definitions of environmental psychology (Source: author)

Name	Year	The given definition of environmental psychology
Craik	1970	Psychological study of human behavior in a way that is related to her daily life in the physical environment
Graumanm	1976	Environmental psychology is complementary to general psychology without environment.
Canter	1981	It is a branch of psychology that pays attention to the study and analysis of human interactions, confrontations, experiences and actions with various aspects of the social and physical environment.
Russell	1982	It is a field of psychology that deals with providing a systematic relationship between the person and the environment.
Holahan	1982	Environmental psychology examines the common relationships between the physical environment and human behavior and experience.
Proshansky	1990	Environmental psychology deals with interactions and relationships between people and their environment.
Gifford	1997	Environmental psychology is a mutual study between a person and her physical location.

2.4. Influence of the Environment on Behavior

Designers and architects are among the most important people whose works and creations affect human behavior in shaping the physical environment. According to his needs, values, and goals, man transforms the environment and is reciprocally affected by the transformed environment; advanced technology causes the human impact on the environment to intensify and speed up. In fact, the environment is a container, and man is considered a container. As containers in space, humans show different behaviors in dealing with the environment; behaviors that can be categorized based on different approaches (Schaumann et al., 2016: 26)

Based on this, two very important factors are influential in the type and manner of behavior: the environment (the information obtained from it) and the individual (with all his characteristics). Therefore, behavior is a result shown in Figure 1:

Fig 1 Behavior outcome diagram

Therefore, it is clear that our activities can take different forms under the influence of these factors (environmental and personal). Also, the behavior is the product of the environment and the

interaction of the two with each other. Various physical factors, including noise, weather, and enclosed spaces, continuously affect humans and their movements. These movements and reactions are called behavior. John Lang believes that regarding the relationship between environment and behavior, four theoretical positions can be distinguished: discretionary approach, possibilistic approach, probabilistic approach, and algebraic approach (Pakzad, 2006: 221).

Table 2 Descriptions of various approaches in relation to the environment and behavior (Source: author)

A variety of approaches	Description
Optional approach	In this approach, the environment has no effect on human behavior. Considering that there are serious limitations to human behavior, this approach is indefensible.
Feasibility approach	Possibilists see the environment as a provider of human behavior and a little more than that. This approach considers the environment as a set of behavioral opportunities according to which an action may or may not have occurred. According to the belief of determinism, when people act freely, they are actually controlled by the environment and heredity.
Probabilistic approach	The environment is only able to provide the context and probability of a certain behavioral or perceptual event and is not able to determine the behavior definitively, and therefore, man is free to choose the environmental conditions. In this theory, the environment increases the probability of certain behaviors due to specific physical conditions, in other words, the environment creates conditions that increase the probability of certain behaviors compared to others. Here, diversity and the right to choose are discussed.
Determinism	This approach considers the environment to be the determinant of human behavior. In this theory, the environment is assumed to mean the geographical or terrestrial environment. This approach considers the environment-behavior relationship as a causal relationship.

In fact, the determinism of environmental determinism is based on the fact that changes in the nature of geographical, social, and cultural environments and natural or artificially built environments can lead to changes in human perception and behavior, and humans are subject to environmental conditions. The environmental enabling theory is based on the fact that the environment provides a set of potential capabilities for some behaviors and that humans are not 100% subject to the environment and have relative choices. Of course, the ability of the environment does not necessarily lead to a specific behavior, but if there is no ability in the environment, the behavior will definitely not be realized. In this theory, the environment provides possibilities or limitations, and behavior is formed based on cultural issues (Lorenz, 2006, 103). So; Any physical environment can consider one of the three approaches as the dominant approach in design and predict the desired behaviors according to it. So; In line with the two-way design of behavior and place in the urban space, it is necessary to examine the concept of behavioral accommodation or the place where a behavior occurs (Ferguson, and Derek, 2016: 199).

2.5. Body and Behavior

The environment (architectural environment) must meet human needs and match the needs of the user (Lawrence, 2005). However, what architects create is a potential environment for human behavior; What a person uses is its effective environment, the environment, the architecture where the main life activities of any society take place has a dominant and permanent influence on the user of this environment. Nevertheless, people do not only try to passively leave their environment, but they actively in order to cope with their needs individually or collectively, leading to specific mutual effects on their environment over time, and these effects Depending on the conditions and

people, is different (Abdel Kader, and Adbel, 2006: 3), in this regard, the surrounding environment is the field of behavior and reaction. "Our spirit and behavior can only be understood if it is understood from the point of view of the environment and behavior." Therefore, the relationship between the surrounding physical environment and behavior is deeply rooted and intertwined, Mary V. Connexted in her recently published book titled Interior Design and Beyond, explains how interior design affects human behavior. He believes that interior designers have a moral responsibility towards the future culture for designing interior spaces that positively affect the quality of relationships between people and their social and physical environment. and human behavior in every design process, both now and in the future, in every space, must be carefully examined by designers. To achieve this goal, designers must understand the main meaning of behavior through specialized scientific methods. In environmental psychology, behavior is an innovative activity that occurs as a result of activities inside and outside the space, so every environment has abilities that are suitable for experiences and behavior. Man is presented. This main process related to the relationship between man and the environment is formed based on it.

Man begins to recognize the surrounding physical environment based on patterns. These patterns are almost innate and partly learned. They form the link between perception and cognition and guide not only cognitive processes but also affective responses and local behavioral actions, which in turn influence plans, known as behavioral outcomes. According to the mentioned materials, it is possible that the spatial characteristics of architecture affect human behavior. This is empirically supported by the statement of numerous studies that have investigated the selected features of space in human spatial behavior. For example, Wiener and Mallet (2003) studied the influence of environmental areas on human spatial behavior and path planning. Based on the mentioned contents, the following conceptual framework is shown in Figure 2.
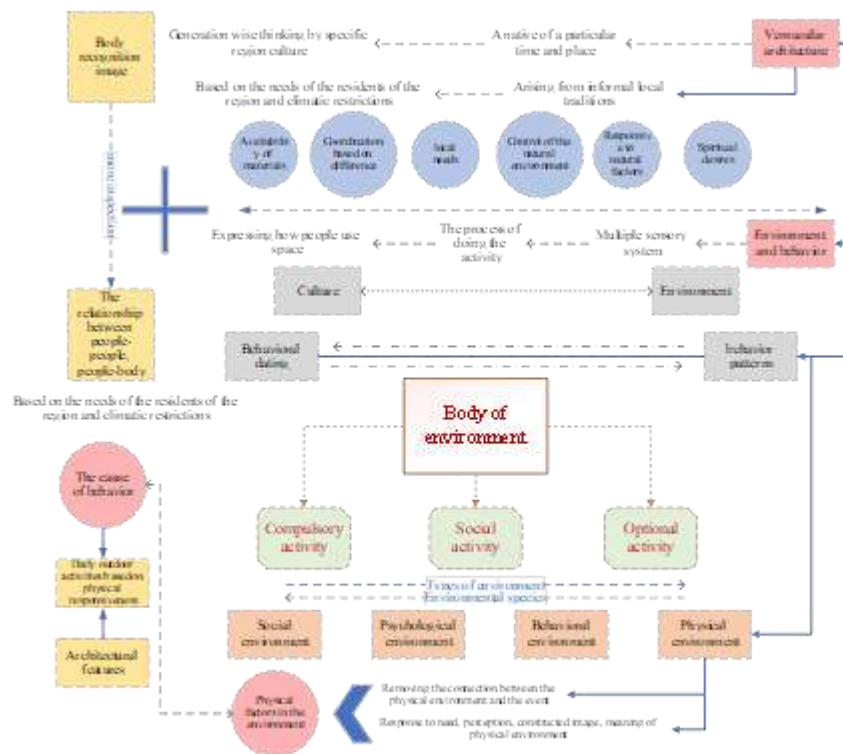

Fig 2 Basic concepts in the representation of the environment and the body in the field of behavior

3. Research Methodology

In terms of type, this research is applied, and in terms of the combined method, qualitative and quantitative nested. In order to reach the answer to the research, a review of the theoretical literature in this field is done first, and the concepts and definitions of the body-behavior components taken from the native architecture are extracted. Then, in order to extract and evaluate the body-behavior components taken from local patterns taken from the traditional market of Kerman City, a semi-structured interview is conducted. It is converted to text and entered into ATLASTI software. Interviews continue until theoretical saturation and semi-structured interviews are conducted with 28 people, and to extract the components, labeling, and open coding are done with the approach of description and interpretation. After this stage, to screen the components, the concept of affected physical components is used to support the behavior, and for high validity, the panel of experts is asked that the components be based on indicating local patterns in the traditional market complex of Kerman city, with a system of giving them numbers between 0 to give 1 and the components that failed to reach the average are removed. After extracting the codes and categorizing them, one question is developed for each component in the questionnaire with a Likert scale. This stage is the beginning of the quantitative part. Then the questionnaires are randomly distributed among the space users due to the uncertainty of the number of people and the statistical population for the sample size, 384 people are selected which is the upper limit of the Morgan table. The results are entered into the GRAPHER16 software and subjected to inferential and descriptive statistical analysis. 20 experts and with a CVR formula equal to 0.78 and reliability was calculated with Cronbach's alpha, whose value is 0.74.
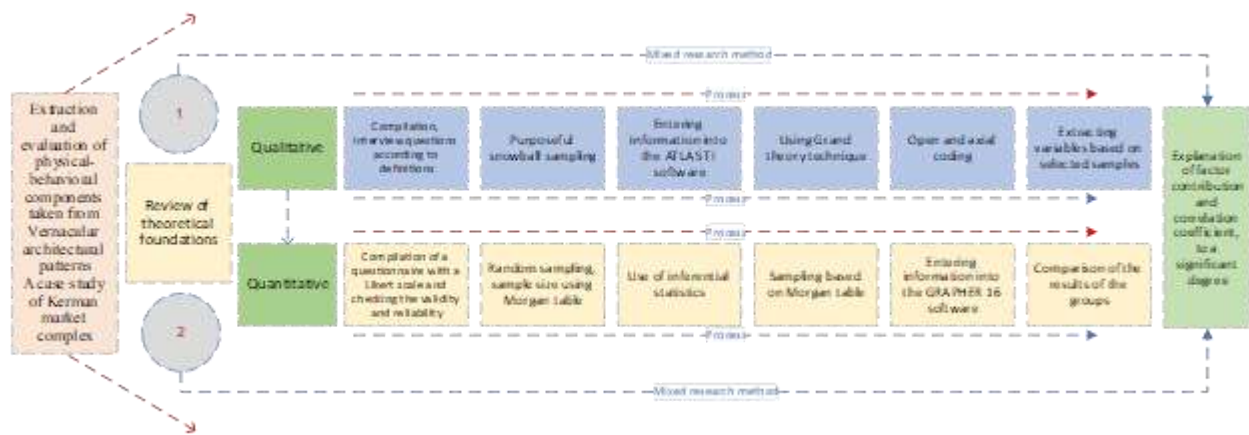

Fig 3 Research process

4. Scope of Study

4.1. Kerman Bazaar

Kerman Grand Bazaar starts from Arg Square and ends at Mushtaqiye Square. Each part of the Kerman market was built during the time of one of the rulers of this city and because of some of its features, it is unique in Iran and has world fame. This bazaar is considered to be the longest bazaar in Iran and was mainly built after the 8th century AH. This work was registered as one of the national works of Iran on 25 May 2001 with registration number 3856. The big market of Kerman consists of different parts, some of them, such as Vakil Bazaar, Faqi Bazaar, Ganjali Khan Bazaar, etc.,

are part of the market, and others, such as Qala Bazar, and Sardar Bazar, etc. are on the way to the big market. whose elements are listed in the Table 3.

Table 3 Introducing the components of Kerman Bazaar

| Bazaar components	Introduction	Pictures
Argh Bazaar	The first part of the market is Arg, which starts from Arg square and continues to four souqs of Ganj Ali Khan. This market is divided into two sub-sections called "Nagarkhane Bazaar" and "Saraji Bazaar."	
Chahar Souq of Ganj Ali Khan	The intersection of two market lines is called Chahar Souq. Due to the intersection of the two lines of the bazaar in the place of Chahar Souq Ganj Ali Khan, in the past this place was considered the most important and busiest point of the city. At this intersection, Ganj Alikhan Bazaar, Arg Bazaar, Mesgari Bazaar and Castle Square Bazaar meet. These four souqs are part of Ganj Ali Khan complex. The interior of these four souqs with interesting stucco and oil paintings, even though 400 years have passed since they were painted, they have still preserved their beauty. Before the arrival of new architecture and the interference of western architecture, the domes of the bazaar were connected as a band. It is considered one of the highest buildings in the city after the Grand Mosque and one of the highest domes in the city.	
Ganjali Khan Bazaar	Ganj Ali Khan Bazaar is the boundary between the four souqs and the optional bazaar. It remembers a very interesting architectural style from the Safavid era and is located in the southern part of Ganj Ali Khan square. On the right side of this market, there is a historical and beautiful bath of Ganj Ali Khan and eighteen shops, and on the left side of it are designed arches that show a beautiful view.	
Optional Bazaar	Optional Bazaar is the fourth part of the market in Kerman, which starts from the end of the southern Ganj Ali Khan Bazaar and extends to the first market of Vakil. The elements in this part of the market can be mentioned Sheikhiyeh School, Golshan Caravanserai, three Sardari Bazaars and at the end of it, Vakil Hammam or traditional tea house.	
Kerman lawyer Bazaar	Kerman lawyer Bazaar is located at the end of the optional market and the Vakil complex. By the order of Mohammad Ismail Khan, the governor of Kerman in 1282 AH. AH (1856 AD) and his son Morteza Qoli Khan Vakil Sani and his children built a large complex including caravanserai, bazaar, bath, mosque, which is still called Vakil and its market is one of the most beautiful markets. The commercial section called Vakil Bazaar was located between the Jame Mosque and the Citadel.	
Sardar Bazaar	Sardar bazaar is in the form of several intersecting bazaars, which are connected to the optional bazaar with three main lines located on the edge of the market. The vast majority of its shops are cloth shops. The floor level of this market is a few steps lower than the market row. This market has a very beautiful architecture.	

Mozaffari Bazaar	Mozafari Bazaar starts from the end of Vakil Bazaar and ends at Mirza Rezai Kermani Street. Mozafari Bazaar is part of Amir Mohammad Mozafar's complex and the phenomena of this part of the market can be mentioned as the Takiya (sefa) of Azakhane, Gadhamgah Bazaar, and Jame Mosque of Kerman.	
Mahmoud Castle Bazaar	Mahmoud Castle Bazaar is the first part of North-South market, located in the southernmost part, the first part of this market is also called Rigabad Gate market. In the past, this market was more important and still old-style blacksmiths can be seen in this part of the Bazaar.	
Castle square Bazaar	Maidan Qala Bazaar starts from Imam Khomeini Street facing Mahmoud Qala Bazaar and ends at Chahar Souq Ganj Ali Khan. Due to its proximity to the eastern and western markets, it is more important than Qala Mahmoud market and has more economic prosperity. Kerman market complex includes other markets as well. Among them, we can mention Gadhamgah Bazaar, Attari Bazaar, Cobblers Bazaar, etc.	
Copper Bazaar	Copper Bazaar is located on the edge of Ganj Ali Khan Square. In this market, you can find shops that offer colorful artistic products and copper carvings.	
Jewelry Bazaar	Zargari bazaar, which is also known as Kayseria, is north-south and starts from the northeast corner of Ganj Ali Khan square.	
Shoemaker's Bazaar	The cobblers' bazaar starts from the end of Haj Agha Ali bazaar and continues parallel to Ibrahim Khan bazaar and ends at Sarai Golshan; And its direction is north-south. This market is covered. Jar Caravanserai is located on the left side and Mirza Hussain Khan Caravanserai is located on its right side. The number of its shops and rooms is more than 160.	
Kolah Mali Kerman Bazaar	Kolah Mali Kerman Bazaar is located between the northern market of Ganj Ali Khan square and the shoemaker's market and has 13 shops. Ganj Ali Khan School is located on the right side of this market, and Ibrahim Khan Complex and one of the doors of Mirza Hussain Khan Caravanserai are located on the left side.	

5. Research Finding

In the summary of all the codes extracted from the interviews conducted in connection with the role of physical components affecting the behavior in the traditional market complex of Kerman city, it is presented as follows. These codes are formed based on description and interpretation. The results are shown in the following steps. At this stage, for the ease of coding, the codebook of components is used that has a deep and meaningful relationship in the direction of the formation of the body and behavior in them.
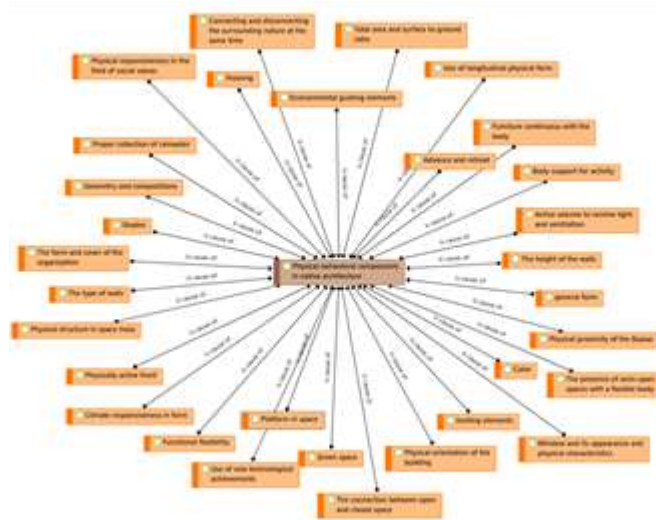
Fig 4 Extracted components from the semi-structured interview based on coded coding

Based on the qualitative findings, 38 codes are extracted, and after summarizing the data, 5 of them are removed, the most prominent being the body support code with the number of 29, and the least prominent is related to green space with the number of 7.

5.1. Quantitative Findings

Descriptive Statistics

The statistical population for this research is the entire space users of the selected and mentioned university building, which was used to find the sample size using Morgan's table; 384 people are selected as the sample size. Questionnaires are randomly distributed. The results show that 39% of the participants are women and 61% are men. The most age group of participants in this research is 54% between 18-22 and 25% between 22-26 and 21% between 26 and 30. The data distribution is shown in Table 4.

Table 4 Data distribution diagram of body-behavior components
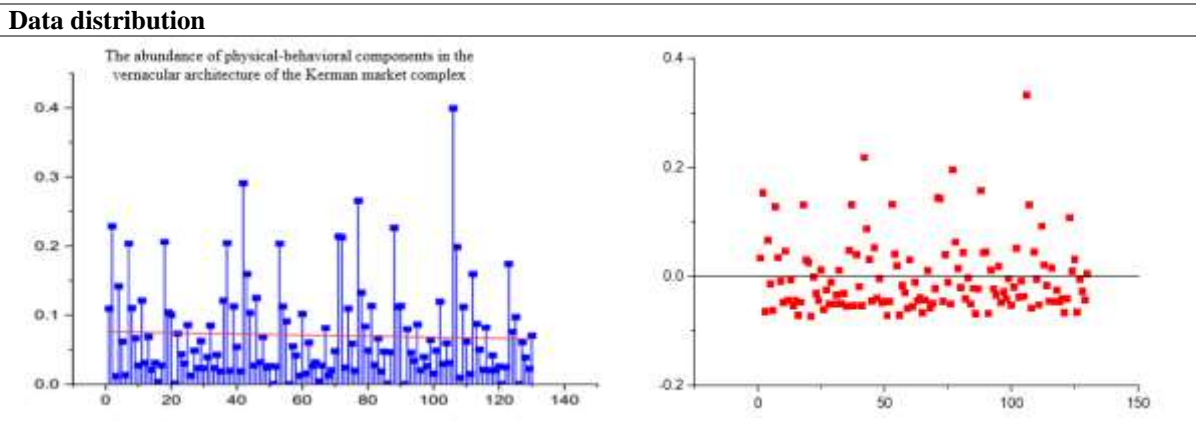
Data distribution

Based on the moving average of the data, it is determined that the distribution of the data is lower than the average and a few data have a frequency greater than the average. Accordingly, the components with the highest frequency include functional flexibility, wall height and overall form.

Inferential Statistics

Regression

At this stage, in order to achieve this, to what extent the mentioned components can play a decisive role in determining a behavior, the dispersion matrix is used. For convenience, 15 samples of the components are first entered into the software. And the result showed that there is no linear relationship between the components and the best type of regression to explain the factor contribution is to use multiple regression.

Fig 5 Scattering of data in the data frequency matrix

Multivariate Regression

In multivariate regression, in each step, the independent variable is inserted or removed to finally reach the optimal model. By looking at the above equation, it can be seen that by increasing or decreasing one unit of each factor and keeping the other factors constant, the variables in it are affected to different extents, and the largest factor contribution is in the body-behavior components in the formation of the traditional market of Kerman. It includes climate responsiveness in the form, body support of the activity, overall form with a value of (1.000) and the lowest factor contribution is related to the inviting elements with a value of (0.295). Also, all the components have a significant relationship to explain the factor contribution. except for the component of flooring,

whose factor is (0.467), but it does not have a significant relationship. To facilitate the review of the results, a summary chart of the determined coefficients has been presented. Emphasizes the placement of selected components.

Table 5 Multiple regression results and stepwise regression coefficients

Component	t	β	B	F	Coefficient of determination	Meaningful	Degree of freedom
Connection between open and closed space	46.522	0.781	1/000	257.222	0.615	0.001	383
Advance and retreat	42.152	0.732	1/000	405.122	1/000	0.002	383
Shades	40.223	0.662	1/000	217.434	0.846	0.015	383
Geometry and compositions	38.239	0.648	1/000	199.943	0.746	0.007	383
Platform in space	8.958	0.664	1/000	201.612	0.762	0.008	383
Form and cover of the organization	11.134	0.662	1/000	643.623	0.383	0.005	383
Functional flexibility	18.441	0.652	1/000	849.683	0.753	0.006	383
General form	19.144	0.665	1/000	349.603	1/000	0.001	383
Green space	49.173	0.483	1/000	184.945	0.571	0.004	383
Use of longitudinal physical form	47.963	0.464	1/000	276.748	0.770	0.004	383
Inviting elements	46.226	0.452	1/000	199.943	0.295	0.005	383
Physical responsiveness in the field of social values	47.228	0.463	1/000	499.034	0.893	0.005	383
Type of walls	21.341	0.662	1/000	673.643	0.467	0.002	383
Proper collection of rainwater	25.215	0.720	1/000	489.782	0.750	0.002	383
Physical structure in space mass	19.215	0.543	1/000	425.365	0.674	0.001	383
Height of the walls	18.215	0.420	1/000	418.234	0.567	0.005	383
Body support for activity	20.312	0.663	1/000	382.412	1/000	0.001	383
Total area and surface to ground ratio	25.876	0.410	1/000	656.782	0.732	0.000	383
Flooring	21.341	0.662	1/000	624.314	0.467	0.810	383
Climate responsiveness in form	25.215	0.720	1/000	645.715	1/000	0.001	383
Connecting and disconnecting the surrounding nature at the same time	18.542	0.541	1/000	546.712	0.674	0.008	383
Use of new technological achievements	18.342	0.394	1/000	318.732	0.567	0.007	383
Active volume to receive light and ventilation	21.611	0.617	1/000	155.923	0.672	0.007	383
Environmental guiding elements	21.571	0.542	1/000	569.014	0.598	0.007	383
Color	24.635	0.843	1/000	654.623	0.711	0.001	383

| Presence of semi-open spaces with a flexible body	26.574	0.912	1/000	421.754	0.843	0.001	383
Furniture continuous with the body	27.258	0.663	1/000	419.754	0.755	0.002	383
Physically active front	19.635	0.410	1/000	432.543	0.745	0.002	383
Window and its appearance and physical characteristics	35.847	0.662	1/000	485.454	0.422	0.003	383
Physical orientation of the building	28.574	0.720	1/000	652.315	0.751	0.003	383
Physical proximity of the Bazaar	26.914	0.543	1/000	518.765	0.384	0.001	383

Correlation

The two-sample Kolmogorov-Smirnov Test is used to check the parametric and non-parametric types of data. This test was conducted for each and every component of solitude in the open spaces of the residential complex of Hamadan city and it was determined that due to the non-parametric nature of the data, Spearman's correlation should be used; Therefore, private variables do not have a normal distribution and non-parametric analyzes can be used for them. Based on the results obtained from Table 6, it was found that the lowest correlation is related to the variable of the general form of the building with a value of (0.246), and the highest is related to the lack of aristocracy with a value of (0.883) with other variables.

Table 6 Spearman correlation of physical-behavioral components in the traditional market of Kerman

Components	Degrees of freedom	Meaningful	Correlation coefficient
Connection between open and closed space	383	0.003	0.481
Advance and retreat	383	0.004	0.745
Shades	383	0.010	0.853
Geometry and compositions	383	0.008	0.246
Platform in space	383	0.007	0.811
Form and cover of the organization	383	0.006	0.831
Functional flexibility	383	0.008	0.883
general form	383	0.001	0.873
Green space	383	0.004	0.623
Use of longitudinal physical form	383	0.004	0.745
Inviting elements	383	0.005	0.657
Physical responsiveness in the field of social values	383	0.003	0.854
Type of walls	383	0.005	0.536
Proper collection of rainwater	383	0.007	0.647
Physical structure in space mass	383	0.003	0.286
Height of the walls	383	0.005	0.597
Body support for activity	383	0.001	0.697
Total area and surface to ground ratio	383	0.000	0.711
Flooring	383	0.009	0.843
Climate responsiveness in form	383	0.001	0.711
Connecting and disconnecting the surrounding nature at the	383	0.008	0.662

same time			
Use of new technological achievements	383	0.007	0.725
Active volume to receive light and ventilation	383	0.007	0.451
Environmental guiding elements	383	0.007	0.465
Color	383	0.009	0.546
Presence of semi-open spaces with a flexible body	383	0.008	0.788
Furniture continuous with the body	383	0.007	0.421
Physically active front	383	0.001	0.365
Window and its appearance and physical characteristics	383	0.003	0.475
Physical orientation of the building	383	0.004	0.481
Physical proximity of the Bazaar	383	0.008	0.745

In the next step, PN modeling is used to find out which of the components are able to be grouped with each other due to the degree of correlation, and which components have a greater impact in each questionnaire separately. Results It shows that the 33 mentioned components can be classified into 7 groups based on modeling, which is displayed in Figure 6.
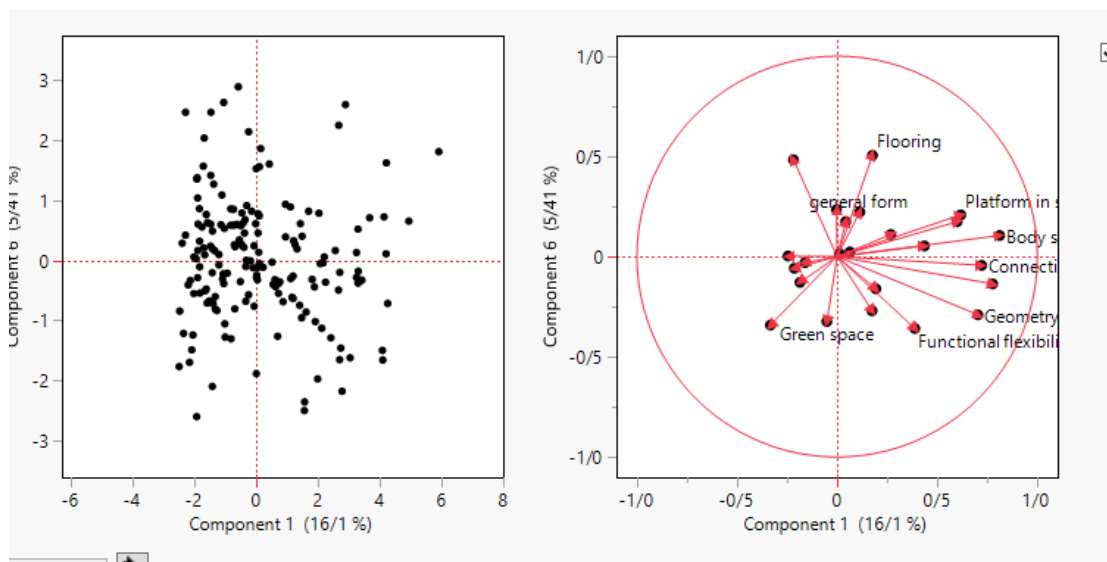
Fig 6 PN modeling of the author of body-behavior in the traditional market complex of Kerman city

The relationship between open and closed space, shades, coming forward and progressing, inviting elements, wall material, platform in space, adjacent to the body of the market, general form, disconnection and connection with the outside environment, color, physical responsiveness in the field of social values, Color is approximately 41% of the influence in the formation of traditional markets in Kerman. Also, these factors are continuous with each other and have an active and interactive function towards each other and should be used collectively. In the next group, organizational coverage rate, use of longitudinal body form, body support for activity, and floor construction in one group have an effect of 29% in the formation of the traditional market of Kerman City. The proper collection of aquifers, physical structure in the mass of space, the height of the walls, and the physical orientation of the whole building are about 17% and the rest of the components are approximately 13% effective in the formation of the traditional market of Kerman.

6. Discussion

Based on the findings of this research, it is clear that the results of descriptive and inferential statistics have discrepancies and the results of inferential statistics should be followed. However according to the data distribution of body-behavior components following the moving average, the tool has been able to measure the issue correctly.

The number of 33 extracted codes refers to the accuracy in theoretical saturation and also the emphasis of experts to extract components indicates their emphasis on visual guide elements to induce the type of activity or to support a specific function in the space, and in their opinion, the behavior according to the body and Their form is formed in the form of mental schemas of users. In descriptive statistics, paying attention to functional flexibility by users allows them to experience different applications such as standing still or moving at the same time in space, and creates potential properties for them, as well as enabling them to He created a trade and place of residence for them for peddlers.

The regression model indicates that the general form of the market, as well as the type of activity, is an emphasis on the internal physical form and internal volumes along with decorations to support movement stillness and sequence in space. The flexibility of the space with respect to multiple functions increases the variety of behavior in the space and gives multiple usability to users for functional efficiency. Based on the results of explaining the physical role of flooring, due to the presence of walls, does not play a significant role in supporting the rafters in the space. PN modeling as a new approach shows the use of identical components in the direction of greater efficiency in supporting behavioral activities. In this research, it is determined that physical and appearance characteristics in the space and how they are used in various components. It can increase and support in space.

7. Conclusion

The native architecture of Iran has an ancient history. In every corner of it, buildings with different architectures can be seen, which at the same time have something in common, this feature has made them necessary to check, and one of them is the market, which still gives its users the ability to use it with its many years old body. Behavior patterns can be recognized based on physical components or supporting components of both dimensions (behavior-body) in luxurious and lasting buildings with continuous efficiency. Because the patterns themselves have emerged in the form of a consistent order in the context of the market environment based on physical aspects, and with their help, we can pay special attention to the development of newly built environments

based on them. These components in their main form include all the forces from the effective environment (natural and human) that lead to the emergence of the physical environment, therefore, their effects in the built environment should be investigated and understood in their exact meaning.

This research shows that the physical aspects inside the spaces can continuously lead to the smell and functional durability of work. Based on that, there is hope that the simultaneous functioning of the components can cause significant growth of the developed buildings of markets such as arcades. In order to achieve human-made environments in commercial centers and arcades, the following strategies are suggested for the use of components:

- Using spaces with diverse bodies and inducing movement by using the difference in the width of the passage to induce stillness and movement and create spatial diversity.

- The use of transparent and flexible spaces to support multiple activities in the space, as well as pay attention to the functional overlap in the physical distribution of commercial spaces.

- Paying attention to the general form in accordance with the commercial functions and integration with the climate in the overall volume of commercial buildings and paying attention to the general form of the interior spaces for accountability in the field of social institutions.

- The use of physical guiding elements for the connection between open and closed spaces in commercial spaces and the efficiency of the continuous body with furniture for multiple body continuity and deeper perception by space users.

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