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Investigating the Compliance of Passengers' Mind Map with the Spatial Structure of Airport Terminals (Case Study: Kermanshah International Airport)

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ABSTRACT: Ease of routing is one of the most important principles in the design of public spaces. Such spaces can provide higher desirability when they can communicate with numerous users. This study aims to find the components affecting the mental image, to investigate the compliance of the mental map of passengers from the terminal, and the effect of the variables of gender, education, and the number of trips on the mental map. The results in the theoretical part reached four main components: body, readability, meaning, and attractiveness, each of which includes six subsets. Then, by studying these components, a questionnaire was developed and distributed among the passengers. Software analyses were performed by SPSS. The results of the one-sample Chi-square test to check the compliance rate of the mind map showed that the mind map of passengers in terms of the body, meaning, and attractiveness is undesirable. However, the readability of the airport is desirable. The effectiveness of gender, education, and the number of trips on the mind map was reported to be 0.34, 0.14, and 0.27, with a coefficient of determination of 25%, respectively, indicating that the above variables explain 25% of the variance of the mind map. According to the t-tests of independent female samples, there was a clearer mind map in all components, and the analysis of the variance test shows that the higher the number of trips and the level of education, the clearer the mind map.

Keywords: *Mental image, routing, Collective spaces, airport terminals, Kermanshah Airport.*

INTRODUCTION

The need for transportation and relocation is one of the needs of humankind. Today, population growth, industrialization, and the expansion of urban communications highlight the need to develop airports as an important part of the transportation system. The country's airports are full of signs built to direct people to the desired destination in the easiest way, unaware that its creators know which factors are readable, meaningful, and guiding for the citizens? And perhaps the multiplicity of these signs may confuse people.

Finding the right path is a challenge most people face in large public spaces. Improper routing in public spaces can lead to confusion, waste of time, and user stress. Routing is purposeful behavior that is closely related to mental imagery.

In the direction of optimal routing, the role of the environment as the main factor associated with mental imagery to guide users is inevitable. Therefore, by focusing on the compliance of people's mental image to the structure of space, optimal routing can be helped. Mental image varies from person to person depending on individual characteristics, culture, and many other factors.

Environmental perception is obtained through sensory and cognitive information stored in the human mind. In this process, the role of the environment as a fundamental factor in growth, development, and, ultimately, learning is considered (Marans, 2003). The first purpose of this research is to identify the factors affecting the mind map of individuals and then to investigate the compliance of this map with the structure of the terminal. In the following, we will examine the effect of gender, level of education, and the frequency of using a space to explain people's mental image better. Paying attention to how a space leaves an

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image on the mind of the audience makes the spaces different from each other. Therefore, finding an optimal solution to guide people to the desired destination can be a serious challenge for correct and principled design. Designers and architects can transform collective spaces, including airports, into attractive, lively, and meaningful spaces by recognizing mental images and the factors that affect them. Given the above, it seems that the compliance of the mental image and the structure of a space is of special importance for better navigation. In the meantime, components such as gender, level of education, and the number of trips affect this compliance rate. Based on these hypotheses, the following questions arise:

1. To better navigate, what components in the definition of space create a clearer mental image in the audience?
2. Is there compliance between the users' mind map and the terminal structure?
3. Do the components of gender, level of education, and the number of trips affect the compliance of the resulting mental image?

Research Background

In the study "The compliance rate of the main structure of Mashhad with the mental image of pilgrims," the authors believe that the old cities of Iran have increased readability and ultimately created coherence due to having the main structure (Kalantari et al., 2014). According to the researchers of this article, there is no comparison between the main structure of Mashhad and the mental structure of pilgrims, which has caused traffic. In this study, researchers, through space layout analysis, concluded that strengthening mind mapping would be possible by establishing Iranian-Islamic elements and creating memorable environments. At the same time, such elements are related to the old structure of the city, which will make them more efficient in solving urban problems, especially traffic problems.

Nadia Daripour (2014), in "Comparative assessment of the mental image of citizens and experts on the concept of urban environment quality in the Mehr housing project (Case study of Omidieh city)," considers the importance of measuring the qualities of the urban environment and to improve environmental quality in the Mehr housing project, use the questionnaires and statistical analysis seeks to answer the question that, what are the priorities of environmental quality indicators in this project with emphasis on a mental image, from the point of view of citizens and experts? Finally, the result indicates that these two groups disagree in some cases, such as the weakness of economic and physical problems in reducing the quality of the environment (Firouzi et al., 2014).

In a study entitled "Cognitive Analysis of Urban Spatial Preferences," Herzog begins his research by choosing two goals as follows: First, the identification of the main context of environmental preferences in the field of psychology, which was founded by Kaplan (Kaplan, 1975). Second: Finding predictor variables that are effective in assessing environmental preferences. He chose a two-sided strategy, on the one hand, the use of psychology, which carries a strong basis for classifying perception. On the other hand, with this selection, it is possible to find predictor variables that are effective in environmental preferences. He studied preferences for unfamiliar urban environments as feedback from urban zoning, time, and four predictor variables: complexity, coherence, recognizability, and mystery.

A qualitative factor was also considered in analyzing environmental preferences for the "environmental observation time" conditions, which includes the following dimensions: Contemporary life, alley/factory, nature in the urban environment, unusual architecture, and old buildings. The results of this study point to different ways urban environments can respond to the maximum preferences of citizens. It also provides solutions for urban planning as follows: the use of identifiable nature and architecture. Considering the age range of people using space, the use of mysterious design due to its possible role in increasing preferences in urban environments, and the use of high visual complexity that must be done with the utmost coherence to maintain visual quality (Herzog et al., 1982). In the analysis section, the data are analyzed using the urban photography technique, and statistical analysis using SWOT-AHP has been studied. Data analysis and interpretation of the questionnaire results showed a significant relationship between mental images and photographic images of urban spaces. The main focus of the research is the comparative evaluation of citizens 'mental images in the study field by examining the role of citizens' mental images. Urban spaces are based on the formation of citizens' mental images with the technique of urban photography in Hassanabad Square in Tehran (Khanlari & Lavasani, 2019).

Passenger transportation is closely related to economic, social, and cultural development programs. This transfer itself requires special tools, some of the most important of which are: powerful communication networks (land, air, and sea), adequate amenities, well-equipped infrastructure facilities, and finally, safe, fast, and accessible means of transport for the general public (Rueda et al., 2017).

Railway stations, airports, ports, and passenger and cargo terminals are among the most important spaces for forming strong and cohesive communication networks. Each of these spaces plays a key role in organizing movement. When it comes to passenger transportation and transportation from one place to another, perhaps the biggest contribution can be made to road transfers and, in other words, buses. Intercity passenger terminals play a key role in the passenger transportation process. In addition to their essential role in this important, these terminals are also one of the main characteristics of cities, which in terms of application, have caused the organization of passenger movement in a city, as well as the planning, guidance, and shaping of the city. In terms of urban view, they are one of the main elements in the city's shape (Leijstra et al., 2018).

At the beginning of the twentieth century, the world witnessed

the birth of a new school, the modern school. This thought soon spread throughout the world. But its destructive effects became more apparent in countries such as Iran. Modern architecture did not respect the region's climate, culture, or identity roots. A modern building with a type and image could be erected and responsive in any country, region, climate, and culture! Nearly half a century after the death of this school, its destructive effects are still evident in our country! Our public buildings are typically erected regardless of their identity, cultural and climatic roots. Of course, sometimes our designers pay attention to these things, but this attention is completely stereotyped, superficial, and superficial, while the spirit of their works is modern (Zhang et al., 2019).

The Conceptual model for measuring and evaluating the mental image is summarized in Fig 1.

Moving in Space and Routing

Motion is the principle of all spatial experiences, and the perception of space depends on motion. As we know, everything is dynamic and evolving in the world of creation, with an external or an internal movement (Rahimian, 2004, 261). The experience of receiving mental images occurs while moving. Routing is a daily occurrence in human life, so obvious that sometimes the necessary infrastructure to guide people properly and in principle is neglected. The study of routing is still in its infancy, and the current methods used in its range from computer simulation to routing people on complex networks of real size.

Nevertheless, humans are very flexible in applying path learning strategies. Anything that facilitates the formation of cognitive maps of the route also facilitates routing (Lawton & Kallai, 2002). Humans use strategies and mental discoveries to perform routing steps (Hölscher et al., 2005, 44).

Understanding how navigation steps are performed helps determine the best way to improve performance. The model proposed by Jules and Furna in 1997 is a complete model that

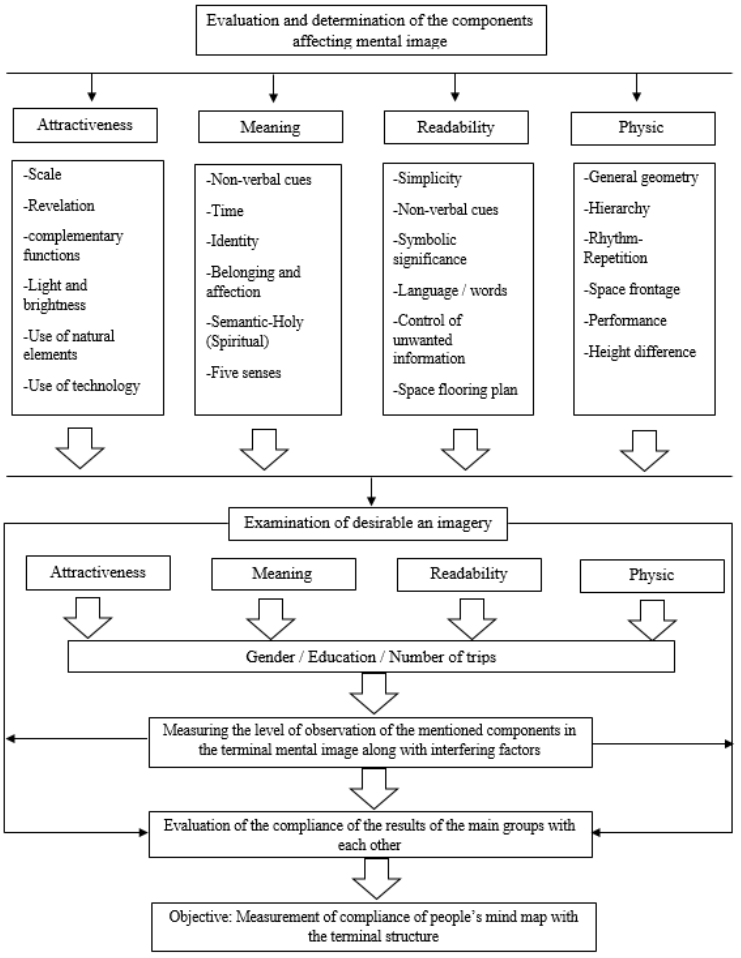

Fig. 1: Conceptual model for measuring and evaluating the mental image compliance rate

combines motion in the process of orientation and a direction that one has not experienced before (Chen & Stanney, 1999; Downs & Stea, 1977; Neisser, 1976; Spence, 1999).

As Figure 2 shows, a person's mental image of space directly affects his spatial behavior. Suppose the architect and urban planner can provide a clear, attractive, understandable, and meaningful image of the space for users. In that case, this, in addition to increasing satisfaction, a sense of security, and tranquility, will help them achieve the desired goals in space, resulting in a more dynamic relationship with the new place.

The Concept of the Mental Image from Different Perspectives and Its Role in Spatial Behavior

The mental image is known by different names such as mental maps, cognitive maps, cognitive images, and mental models. The term is credited to Edward Tolman, who first proposed it in 1932. Mental imagery has been proposed in various fields such as psychology, archeology, urban planning and design, and architecture (Eppler, 2006).

Observing the environment means creating a mental image based on past experiences and observations. The more well-organized the storage of information in mind, the more difficult and incomplete it will be to use that information to recognize the environment and create a true and complete image. Mental images may not exist at all and are just an example of some of the characteristics of the real world. This mental image may consist of just a few irregularly placed terms and words. But as soon as we find an incomplete image of the environment, we can make a model, although incomplete, showing us what points or elements people pay more attention to and what is their mental image of the environment? (Bahraini, 2003, 303)

According to Gestalt theories, the human mind is composed of meaningful general perceptions that these perceptions are related to each other through association and thus interpret phenomena (Naghizadeh, 2007). According to Downes, mind maps are "a set of readily available and shorthand signs that we employ, recognize, and agree on; these signs can vary from group to group and from person to person and be the result is our tendencies, prejudices, and experiences" (Downs & Stea, 1973, 25). According to Marius-Cristian Neacsu and Silviu Neguţ, cognitive maps are linked to psychological processes so that everyone acquires, encodes, stores, retrieves, and retrieves environmental information (Neacsu & Neguţ, 2012). Motalebi believes that environmental perception is "a process through which human beings select the necessary data based on their needs from their environment" (Motalebi, 2001). Despite the different interpretations, "there are slight differences in the definition of the mind map, all of which are derived from a general concept. In a very simple sense, the term mind map means creating a map in mind" (Roberts, 2003).

According to different people's theories, it can be concluded that cognition and behavior in the environment are through mental images. These images are taken from various factors and deeply connect with cognitive and psychological processes.

The Process of Mental Perception

To understand the mechanisms of our knowledge of our environment, the main way to achieve this goal is to draw a mental map, that is, to create a mental image of the environment that people form and use as a model of behavior. Lynch

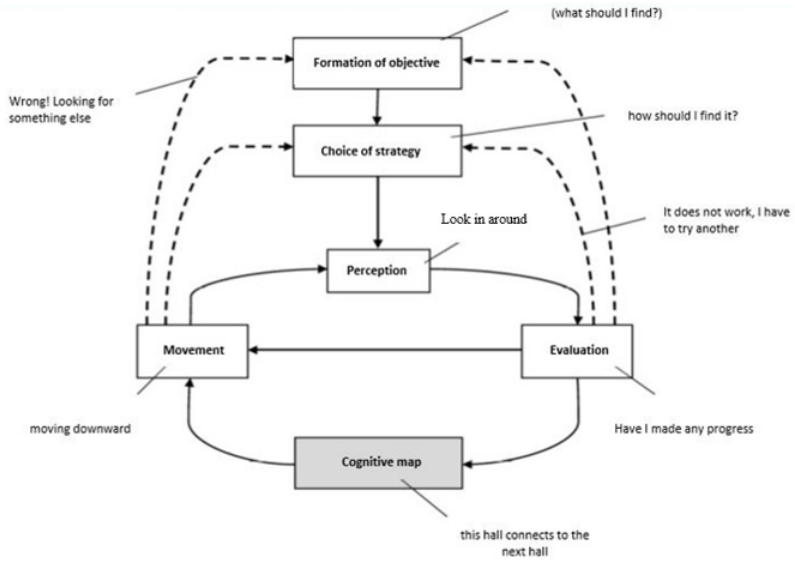

Fig 2: Orientation steps in space (Source: Schlender et al., 2000)

Table 1: Factors influencing the formation of mental image

Factors affecting the mental image				
No	Body	Readability	Meaning search	attractiveness
1	Geometry	Transparency	Non-verbal cues	Scale
2	Hierarchy	Non-verbal cues	Time	Revelation
3	Rhythm - repetition	Symbolic significance	Identity	Complementary functions
4	Space	Language/words	Belonging and affection	Light and brightness
5	Function	Control unwanted information	Semantic - sacred (spiritual)	Use of natural elements
6	height difference	Space flooring plan	five senses	Use of technology

concluded that creating environments with "obvious clarity and readability" should be an important turning point and attention for the observer (Madanipour, 2000, 330).

The images the environment creates in the observer's mind result from a two-sided flow between the observer and his environment. The environment manifests itself in its manifestations and creates a relationship in the observer's mind between him and his experience. The observer selects some visual factors and brings them into the system in his mind. The image that is thus created intensifies the observed factors. At the same time, the image itself is tested with a constant and moving flow based on the criteria of selected observed factors that come to mind. Therefore, the image of each assumed fixed factor may be completely different in the minds of different observers. The interconnection of image components can be achieved in different ways. Organized factors may be negligible in the observed object. However, because the observer has a long acquaintance with it, it is identified and systematized in his mind. A person may easily find the desired object where all the objects in it seem confused. On the contrary, the object may be observed for the fir

Time easily creates a clear image in the mind, not because it is familiar to the observer, but because of the similarity and harmony with the image already in the observer's mind (Lynch, 1960, 57).

No factor is experienced by itself unless it is observed concerning its context or environment, the sequence of events that caused it to occur, and is related to memories and experiences.

Many factors, such as the sensation that colors, shapes, motility, and variety of light create for the eye, and smell, sound, and sense of touch, contribute to the recognition of the environment. These factors lead to creating an image of the environment in the observer's mind. The clearer the image, the more readable the environment. An environment that is clear in mind creates a sense of security and increases the depth and intensity of the spatial experience (Pakzad, 2006).

In Table 1, the factors affecting the formation of mental images, these factors have been classified.

Table Description: A human is a creature who attributes different characteristics to a phenomenon and does not look at different phenomena from one dimension. For example, an element also has a semantic load while being signified. The same element may or may not function in the physical dimension. Therefore, many elements are multidimensional from the human point of view. Therefore, in classifying the factors affecting the mental image in the above table, some elements are classified based on the common function, which is why some of the sub-components are repetitive. It is worth mentioning that the prepared questionnaire was designed to examine the mind map based on the main and sub-components of the above table.

MATERIALS AND METHODS

Identifying travelers' mental images is one of the priorities of this research. Various methods for receiving mental images of the environment and recognizing people's environmental perceptions, such as questioning, field observations, and interviewing. According to the characteristics of the desired location, data collection was done in the field and through the distribution of questionnaires among participants. In this way, after explaining the research objectives to the participants, the questionnaire was completed and returned in the presence of the researcher. The research method is of survey type and is applied type in terms of objective. Documentary and library methods have also been used to formulate theoretical foundations.

The data analysis tool is SPSS statistical software. The instrument's reliability was determined using Cronbach's alpha test and was reported and confirmed equal to 0.86. The statistical population includes passengers of Shahid Ashrafi Airport in Kermanshah. The sample size is available according to the calculation of the population size in the Cochran formula equal to 384 people. The available sampling method has been used. Given the hypotheses' nature, t-tests, variance analysis, and a one-sample Chi-square test were used to test and analyze the hypotheses.

Case Study Specification

Kermanshah International Airport is the most important and

Fig. 3: The aerial photo of Kermanshah International Airport (Source: Google maps, 2022)

largest airport and hub in the western part of the country, the runway length of this airport is 3400 meters, and the parking space of its airlines is 38200 square meters. The primary design of Kermanshah Airport dates back to 1970. However, it was put into operation in 1995. This airport currently has two terminals and is the busiest airport in the country's west, handling about three million people a year. One of the two terminals of this airport is for foreign flights and the other, which has a new building, is for domestic flights. The international flight terminal, with an area of about 5000 square meters, has been built on two floors. The first floor is dedicated to passenger services and the other to administrative affairs. The new terminal has been built in the same area as the international flight terminal. A special passenger section (V.I.P and C.I.P) has also been designed and built in this building. The incoming flight section (arrivals) in the new terminal is built in a separate building and adjacent to the terminal. The airport terminal building has all the necessary international standards, including free shops, bank branches, restaurants, and buffets. The aerial photo of Kermanshah International Airport is shown in Figure 3.According to the airport's statistical population and Cochran's formula, 384 questionnaires were completed randomly in the terminal.

RESULTS AND DISCUSSION

After collecting the questionnaires, the respondents' gender and education information was first examined and categorized. As shown in Table 2, the gender distribution of the respondents in this study indicates that 58.9% were male and 41.1% were female. In the distribution of education, 14.3% of the respondents reported their education as a diploma, 48.4% as a bachelor's, 20.8% as a master's, and 16.4% as a doctorate.

According to Table 3, because the significance level is equal to 0.0001 and this value is less than the standard level of 0.05, it can be concluded that the mental map of passengers from the body of the airport is undesirable. According to the observed frequency, 73% of the respondents reported the body as undesirable and 27% as favorable.

According to Table 4, because the significance level is equal to 0.0001 and this value is less than the standard level of 0.05, it can be concluded that the mental map of passengers from the structural readability of the airport is desirable. According to the observed frequency, 40% of the respondents reported readability as undesirable and 60% as readability as desirable.

According to Table 5, because the significance level is equal to 0.0001 and this value is less than the standard level of 0.05, it can be concluded that the passengers' mental map of the structural meaning of the airport is undesirable. According to the observed frequency, 74% of the respondents reported the meaning as undesirable and 26% as desirable.

According to Table 6, because the significance level is equal to 0.0001 and this value is less than the standard level of 0.05, it can be concluded that the passengers' mental map of the structural attractiveness of the airport is undesirable. According

Table 2: Frequency of respondents by gender, level of education, and number of travels per year

Variable	Dimensions	%
Gender	Male	58.9
	Female	41.1
Education level	Diploma	14.3
	Bachelor	48.4
	Master	20.8
	Ph.D.	16.4

Table 3: One-sample chi-square test to examine the compliance of passengers' mental map of the body component

Dispersion of responses	Observed frequency	Value of chi-square	Degree of freedom	Significance level
Disagree spectrum (undesirable evaluation)	281	82.51	1	0.0001
Agree spectrum (desirable evaluation)	103			

Table 4: One-sample chi-square test to examine the compliance of passengers' mind map from the readability component

Dispersion of responses	Observed frequency	Value of chi-square	Degree of freedom	Significance level
Disagree spectrum (undesirable evaluation)	156	13.50	1	0.0001
Agree spectrum (desirable evaluation)	228			

Table 5: One-sample chi-square test to examine the compliance of the mind map of passengers from the component of meaning

Dispersion of responses	Observed frequency	Value of chi-square	Degree of freedom	Significance level
Disagree spectrum (undesirable evaluation)	285	90.09	1	0.0001
Agree spectrum (desirable evaluation)	99			

Table 6: One-sample chi-square test to examine the compliance of travelers' mind map from the attractiveness component

Dispersion of responses	Observed frequency	Value of chi-square	Degree of freedom	Significance level
Disagree spectrum (undesirable evaluation)	279	90.09	1	0.0001
Agree spectrum (desirable evaluation)	105			

Table 7: Independent sample t-test to compare the mean compliance rate of the mind map of travelers by gender

Variable		Number	Mean	Standard deviation	t-test value	Mean difference	Significance level	Test result
Travelers' mind map of the body	Male	226	2.59	0.63	0.32	0.02	0.74	No significant difference
	Female	158	2.61	0.66				
Travelers' mind map of readability	Male	226	3.02	0.79	3.56	0.26	0.0001	With significant difference
	Female	158	3.29	0.61				
Travelers' mind map of meaning	Male	226	2.38	0.75	7.23	0.54	0.0001	With significant difference
	Female	158	2.92	0.68				
Travelers' mind map of attractiveness	Male	226	2.44	0.75	8.31	0.63	0.0001	With significant difference
	Female	158	3.07	0.70				

to the observed frequency, 72% of the respondents reported the attractiveness of the airport as undesirable and 28% as the attractiveness of the airport as desirable.

According to Table 7, the value of the significance level of all components in the t-test table, except for the travelers' mental map of the body, is less than the standard level of 0.05. Therefore, it can be concluded that the travelers' mental map of the body is not significantly different between male and female travelers. But women have a higher average than men in the mind map of readability, meaning, and attractiveness. In general, according to the results of this test, it can be concluded that women in all items have a higher average than men.

According to Table 8, the difference between the levels of education of travelers in the category of mind map, a

significant difference was observed in all components, and their significance level was reported to be less than the standard level of 0.05. Therefore, it can be inferred that the mental map of travelers of bodies, readability, meaning, and attractiveness are different between different educational groups. The higher individuals' education level, the clearer the mental map will be.

According to Table 9, the difference between the numbers of annual trips of passengers to the category of mind map, a significant difference has been observed in all components. The mean values have different values , and their significance level is reported to be less than the standard level of 0.05. Therefore, it can be inferred that the mental map of travelers of body, readability, meaning, and attractiveness has varied among travelers with the different number of annual trips; the higher the number of trips, people will have a clearer mental map.

Table 8: Analysis of variance test to compare the compliance rate of travelers' mental map in terms of the variable of education

Variable		Number	Mean	Standard deviation	F-value	Significance level	Test result
Travelers' mind map of the body	Diploma	55	2.49	0.77	3.91	0.009	With significant difference
	bachelor	186	2.62	0.57			
	Master	80	2.70	0.76			
	Ph.D.	63	2.72	0.53			
Travelers' mind map of readability	Diploma	55	3.01	0.59	7.18	0.0001	With significant difference
	bachelor	186	3.10	0.77			
	Master	80	3.25	0.70			
	Ph.D.	63	3.34	0.65			
Travelers' mind map of meaning	Diploma	55	2009	0.75	12.71	0.0001	With significant difference
	bachelor	186	2.22	0.74			
	Master	80	2.65	0.74			
	Ph.D.	63	3.009	0.70			
Travelers' mind map of attractiveness	Diploma	55	2.11	0.53	9.93	0.0001	With significant difference
	bachelor	186	2.33	0.82			
	Master	80	2.70	0.72			
	Ph.D.	63	2.84	0.83			

Table 9: Analysis of variance test to compare the mean of the adaptation of the mind map of travelers in the variable of the number of annual trips

Variable		Number	Mean	Standard deviation	F-value	Significance level	Test result
Travelers' mind map of the body	Less than 10 times	233	2.12	0.69	5.81	0.001	With significant difference
	Between 10 and 20 times	65	2.30	0.62			
	Between 20 and 30 times	42	2.66	0.42			
	More than 30 times	44	2.70	0.47			
Travelers' mind map of readability	Less than 10 times	233	2.01	0.70	19.50	0.0001	With significant difference
	Between 10 and 20 times	65	2.26	0.56			
	Between 20 and 30 times	42	3.32	0.52			
	More than 30 times	44	3.01	0.86			
Travelers' mind map of meaning	Less than 10 times	233	2.07	0.85	9.16	0.0001	With significant difference
	Between 10 and 20 times	65	2.23	0.64			
	Between 20 and 30 times	42	2.51	0.54			
	More than 30 times	44	2.70	0.40			
Travelers' mind map of attractive-ness	Less than 10 times	233	2.13	0.78	17.18	0.0001	With significant difference
	Between 10 and 20 times	65	2.25	0.41			
	Between 20 and 30 times	42	2.70	1.07			
	More than 30 times	44	2.95	0.51			

CONCLUSION

One of the problems that most people have experienced is losing or wasting time due to confusion in finding the desired route and destination in public spaces such as airport passenger terminals. A mind map or mental image means creating a map or image in mind with the help of which a person communicates with the world around him and tries to satisfy his needs. A dynamic relationship with space depends on having a clear mental image of the space in question. By increasing the compliance rate of mental image and its correct and principled formation, it is possible to provide the ground for movement and principled behavior along with correct navigation in space and comfort for users. What makes navigation correct and with the least amount of time in public spaces is the compliance of the individual's mental image to the desired space. According to researchers, factors such as color, smell, touch, and many other factors can be used to enhance and clarify the mental image and thus the readability of the environment. Accordingly, the role of the architect and urban planner in creating a clear and understandable image of the environment through intervention and manipulation of the environment to enhance the mental image is inevitable. In the theoretical part, to find the effective factors in the formation of mental imagery and its classification, this research classified the mentioned components into four main groups, each of which includes six subgroups. These four groups are body, readability, meaning, and attractiveness. Researchers in the analytical part of this study first measured the compliance of the mind map of people from the airport according to the factors of output in the theoretical part designed a questionnaire, then used it to measure the extent of this compliance. It should be noted that the reliability of the tools of this research has been done using Cronbach's alpha test and reported and confirmed equal to 0.86.

The software analysis results show that Kermanshah International Airport has been approved only regarding readability and compliance of travelers' mind maps with the terminal structure. The compliance rate has been reported below average in other dimensions, including body, meaning, and attractiveness. There is a need to maintain this position and improve it as much as possible due to the international nature of the airport and the strategic position of the city of Kermanshah with the country's western provinces. The results of the study of gender, education, and the number of trips are as follows: In examining the effect of gender on the mind map, it can be said that women have a higher mean value in terms of the components of readability, meaning and attractiveness than men. In other words, mental image compliance has been reported higher in women than men. Statistics also show that the higher the level of education, the clearer the mind map of individuals, and the higher the number of trips, the better the mind map of individuals. The results of this research help the policymakers and managers of the country's aviation industry to strengthen the mental image of passengers and provide integrated and maximum communication between the terminal and users. Finally, to assess the generality of the findings, it is necessary to conduct similar research at other airports for further investigation.

However, in addition to considering the executive solution that was examined in this study, it is possible to study more closely the other physical elements that form the spaces and pay attention to their dimensions and location in the design, and quality conditions, which significantly raised the noise in the inner hall of the airport.

On the application level, the impact of versatile air terminal signage on traveler streams offers the opportunity to extend airplane terminal incomes. Effective utilization of concessionary region and a great benefit level based on traveler recognition may increase the proficiency of the office to manage the demanding SESAR necessities for 2020 concerning the capacity, security, and commerce orientation. To advance confirm the reenactment comes about, the individual tracker created will always be made strides through vigorous computer vision algorithms. Since tracking travelers at exceedingly swarmed areas could be a requesting errand, a manual post preparing might be maintained a strategic distance from tentatively to realize this handling in genuine time conditions.

AUTHOR CONTRIBUTIONS

This article is taken from Ms. Maryam Amiri's doctoral dissertation. Dr. Ziaei has been the supervisor, and Dr. Taheri has been the advisor of this dissertation.

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This article was extracted from the first Author's Ph.D. thesis under the title: Analysis on effects of personality traits, self-concept, and creative problem-solving (C.P.S.) in how to create a cognitive map for users of communal spaces (Case study: airport terminal), that was performed at the Islamic Azad University, Kermanshah Branch, Department of Architecture.

CONFLICT OF INTERESt

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy, have been completely witnessed by the authors.

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