Research on Humanities and Social Sciences
ISSN 2224-5766 (Paper) ISSN 2225-0484 (Online)
Vol.14, No.1, 2024 

# Strategic Planning for Sustainable Development of Suburban Communities with the Participatory Approach (Emphasis on Environmental and Physical Assessment): The Case of Shahriar City

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**Abstract**
One of the critical challenges facing most of today's suburban communities is the lack of physical and environmental assessments, which leads to unplanned growth. The present study aims to identify and address the physical and environmental problems in Shahriar City, a suburban area grappling with environmental degradation. A participatory methodology has been adapted, focusing on the most critical issues identified through participatory rural appraisal (PRA). In suburban communities such as Shahriar, an emphasis on community participation can be highly beneficial, and the involvement of local residents can be facilitated through collaboration with non-governmental organisations (NGOs), which commonly employ PRA. The results indicate that the most effective strategy for this city involves addressing threats and weaknesses, utilising the city's location appropriately, and enhancing the overall quality of life. These strategies are identified as crucial based on external factors. Additionally, the horizontal expansion of urban construction and the intensification of environmental challenges, such as drought and the depletion of groundwater aquifers, along with the clearing of natural lands, emerge as the most pressing problems.
**Keywords:** participatory planning, physical and environmental dimension, suburban communities, sustainable development, Shahriar City
**DOI:** 10.7176/RHSS/14-1-04
**Publication date:** January 31st 2024

## 1. Introduction

Under the influence of local socio-economic conditions and global propulsive forces, today's cities, compete to catch attention of social, cultural, and economic investments, and sometimes this competition and dynamism cause the emergence of spatial domains and various forms of habitation in the environment around. (Daneshpour, 2006) Every city has important and basic needs that due to the development of today's cities, these needs occur unplanned (Bavand Consulting Engineers, 2011). Cities should have the tools to engage in effective, evidence-based, and inclusive participatory planning. (United Nations, 2019) And new approaches to planning, including environmentally policies, accountability and participation are essential to achieving healthy, productive and equitable human settlements (World Health Organization, 1999). Today, due to the increase in urbanization and the development of the urban population, the optimal management of cities has been considered by many scientists (Mahdavinejad et al., 2013). On the other hand, people as the main component of urban settlements and also as the target community in urban planning and management should play a role in the management and administration of cities, based on participatory urban planning and citizen participation. In the implementation of any urban development plan, where people are actively involved in its stages, success is often achieved and therefore the participation of the people is considered as the most important factor in the success of projects (Daneshpour et al., 2018). Therefore, sustainable decision-making is not possible except by sharing the opinions and views of the people in the preparation and implementation of urban plans (Movahed et al., 2019; Taghvai et al.,2019),(Hanachi et al .,2000; Ahmadi, 2014).

As the population grows and urbanisation accelerates, new residential spaces are created from the "city-village-nature" confrontation in the surroundings of cities, which are strongly influenced by urban activities, such residential spaces are called suburbs. (Daneshpour, 2006) (Jomehpour,2013; Webster, 2002).The suburbs have special conditions that distinguish them from urban and rural areas, such as the acceleration of urban residential and commercial users and the reduction of rural activities, rapid but unplanned growth, inadequate infrastructure services, low and middle income residents and the growth of trade markets. (Kazemian, 2019). In the second half of the twentieth century, the concept of participation with a new perspective became a key issue in development programmes, especially urban development programmes (Yaghfoori et al., 2014). The global experience shows that since 1980, the participatory approach has been given increasing attention in urban development programmes,

 

the participation of the urban community has become a main basis in the implementation of urban development projects (Rajabi, 2012). Nowadays, public participation is considered as an integral part of the planning process and in leading countries. Participatory urban planning is a form of political and social participation. Physical and environmental are two inseparable parts of our cities and considering them in planning is an important option in successful planning. (Shokouei, 2004) (Sharifian Thani, 2001). The concept of participation in our society is mixed with many misinterpretations and misunderstandings. The prevailing understanding in this case is: Involving people in the implementation of construction projects by financing these projects (Khadem Al-Husseini et al,.2012), (Taleshi, 2011)

Participatory planning, which is a new approach in the field of urban planning, involves planning with the participation of people, individuals can include a wide range of different stakeholders, depending on the issue and area of work. Strategic planning often involves making decisions about long-term capital investments, such as building a factory, installing a particular information technology (IT) system, or creating an organisational unit to develop data applications (S. Phadnis., et al. 2022). Accordingly, participatory urban planning can be considered as citizen participation in creating, improving and managing the neighbourhood and residential environment (Taleshi, 2011).According to the World Bank, participation is a process through which beneficiaries share their control over the development process and decisions and resources related to the programme (WorldBank, 1994).From the perspective of the United Nations, participation is for the involvement of people in the decision-making process and for the growth of social awareness and meeting their needs in the intervention process (Mahdavinejad,2013).

## 1.1 Literature review

### 1.1.1 Collaborative planning

Banfield first proposed the concept of 'rational' planning in 'Policy, Planning, and Public Interest', arguing that planning is a set of rational actions chosen to maximise public interest and effectiveness of outcomes (Mayerson, 1964). From the point of view of instrumental rationality, urban planning is a means to achieve urban development goals, divorced from social, economic and cultural aspects, and urban planners see themselves as practitioners and managers of the urban system. Meanwhile, in the 1960s, the civil rights movement was underway in Western countries. Traditional top-down, rational planning was being challenged by the public and criticised by academics. Whether or not planners were "rational" spokespersons was widely debated.

Habermas proposed the view of 'communicative rationality' as sublimation. He believed that the potential for certain kinds of reason was inherent in communication.

According to Habermas, the phenomena to be explained by this theory are "rules that are intuitively mastered in order to reach understanding and implement reason" and belong to actors who have the capacity to speak and act (Habermas, 1979),(Innes, J.E., 1995; Healey P. , 1996).

Weber pointed out that society is not a logical structure designed by engineers, but contains logical and irrational elements and their interaction. Davidoff first introduced public participation in payment planning in 1965. He argued that planners should open their files to the public and vote on comprehensive plans.

In the 1970s, neoliberalism and communalism theoretically reconstructed the relationship between the state, the market and civil society, emphasising the importance of public participation. In this context, community planning offers two dominant models.(Davidoff, 1965)

In 1987, John Friedmann promoted a radical planning model based on "decolonisation", "democratisation", "self-empowerment" and "achievement" (Friedmann, 1993). In the Western concept, planning has changed from the construction of the physical environment only to the reconstruction of society in multiple dimensions, including the physical environment, economy and society ( Muminovi et al., 2022) (Tayebi,2013)

### 1.1.2 Strategic planning for sustainable development in local communities

Municipalities vary greatly in size and population. In order to analyse the sustainable development of a city, it should be taken into account that a city is an unnatural and very dynamic environment from the beginning, where different aspects of the natural environment have been sacrificed to create urban masses (Čiegis, A.; Gineitienė, D, 2008). According to the fact that densely populated cities have created a very large economic signal is not only a sign of instability, but also the result of a special arrangement of special factors and special sizes. In order to implement a sustainable urban policy, it is essential to have a strategy that includes many aspects, where social and economic interests, cultural interests are compatible with the environment, as well as anticipating the future. Draugelis and Gailius, sustainable urban development can be described as: "Development that ensures that local residents can live at an acceptable level, accept prosperity and maintain it, and this development has a growing trend, without creating a danger for the residents of the neighbouring areas" (Gailius ; Draugelis, 2009)

Since municipalities are different in terms of territory, population, environment, political and socio-cultural conditions, local authorities, together with each municipality, should find an individual way for sustainable development from technical and economic development,

The participation of residents in various aspects of local life is particularly important, because the

 

achievements of their residents are somehow important.

The Global Sustainable Development Report (United Nations, 2019) was prepared according to the decision of the United Nations. The report reflects the universal, indivisible and integrated nature of the 2030 Agenda for Sustainable Development. It also aims to strengthen the science-policy interface as an evidence-based tool to support policymakers and other stakeholders in implementing the 2030 Agenda across the social, economic and environmental dimensions of sustainable development. (Afrakhteh, 2021)

1.1.3 The role of local authorities in the participation of local communities in strategic planning

Participatory strategic planning is a process that provides an opportunity for the public and stakeholders to participate in the strategic planning and implementation process for sustainable development. Based on the principles of sustainable development, democracy and market economy, the strategic plan helps to use limited budgetary resources more rationally and to better coordinate and implement programmes in different sectors by creating management and planning systems. The advantage of the participatory strategic planning process is the ability to identify the main problems and their solutions to focus on, based on a good understanding of the current situation and the future prospects of the local people. It can be said that preparing a strategic plan for sustainable development with the real presence of people's participation is a challenge for planners and management of municipalities, because it means full organisational responsibility for the success of the process. The main role in the planning process is given to the community. (Čiegis et al,. 2007). The article presents a model for managing the suburban areas of Tehran metropolis, while studying the concept of suburbia and its consequences, examines research and presents a model for integrated urban management in region 22 of Tehran. For this purpose, using the Delphi technique and creating a panel of experts in the field of urban management and familiar with the conditions of the research area; studying and recognizing the stakeholders and managerial actors of the region, determining and separating their structural and functional position, identifying the type of relationships and their cooperation and interaction with each other in the current and favourable conditions, and finally, a proposed model for managing this region was presented. (Kazemian, 2019)

1.1.4 Sustainable development concept: its evolution in the context of origin

Chapter 28 of Agenda 21 (Agenda, 1992) states that the participation of local authorities is a crucial factor in achieving the goals set and plays an important role in promoting sustainability. According to the Agenda 21, many of the problems addressed in the document are rooted in local activities of sustainability criteria in the implementation of these documents.

During the first five years of Lithuania's independence, development strategies were mostly prepared by foreign experts. The strategies were prepared taking into account the requirements of the international foundations of the strategic plans prepared by foreign experts. The participatory process of responsibility for strategic planning for sustainable development should be shared among the participants in the process:

a) residents of the local community, who form a major part of the participation in the planning process

b) Community leaders who take responsibility for wider community participation

c) Municipal representatives who provide and organise information.

Other resource approaches that recognise that ecosystem services are produced through human-nature interactions (Malmborg et al., 2021), (Mitake et al., 2020). The attention to the physical and environmental dimensions, as well as the use of the participatory method in the suburban community, is an issue that has received less attention in other studies.

Finally, it can be said that Shahriar as one of the most important cities in Tehran has a suitable climate and many gardens compared to other cities, which unfortunately the amount of damage to these areas is increasing day by day and it has been shown that it can have irreparable consequences (Bavand, 2003) (Land Use Planning Studies, National Planning Orientations, 2006).

This city is one of the fruit production areas of Tehran province and its selection as a second home due to the prominent environmental features as well as negative points such as the physical rupture of Shahriar city and the existence of problems in this city caused this city should be selected as a study area, so a participatory approach can be an effective approach in identifying the issues and problems of the city. In this research

1. What are the most important physical and environmental problems of Shahriar?
2. What are the most important strategies to reduce physical and environmental problems?

## 2. Data and methodology

2.1 Study areas

The city of Shahriar is located in the west of Tehran and is connected to the city of Islamshahr Robat Karim, and Gods. It is neither a city nor a village that is why it is known as a suburban community. It was founded in 1992 because the population was not absorbed by the city. According to the previous planning, the increase in population has caused many problems, the unregulated expansion of the city area and population density, resulting in the loss of natural resources, public costs, excessive expansion on the surface, lack of adequate transportation networks and lack of appropriate quality of life for citizens. (Bavand Consulting Engineers, 2011). (figure1)

 

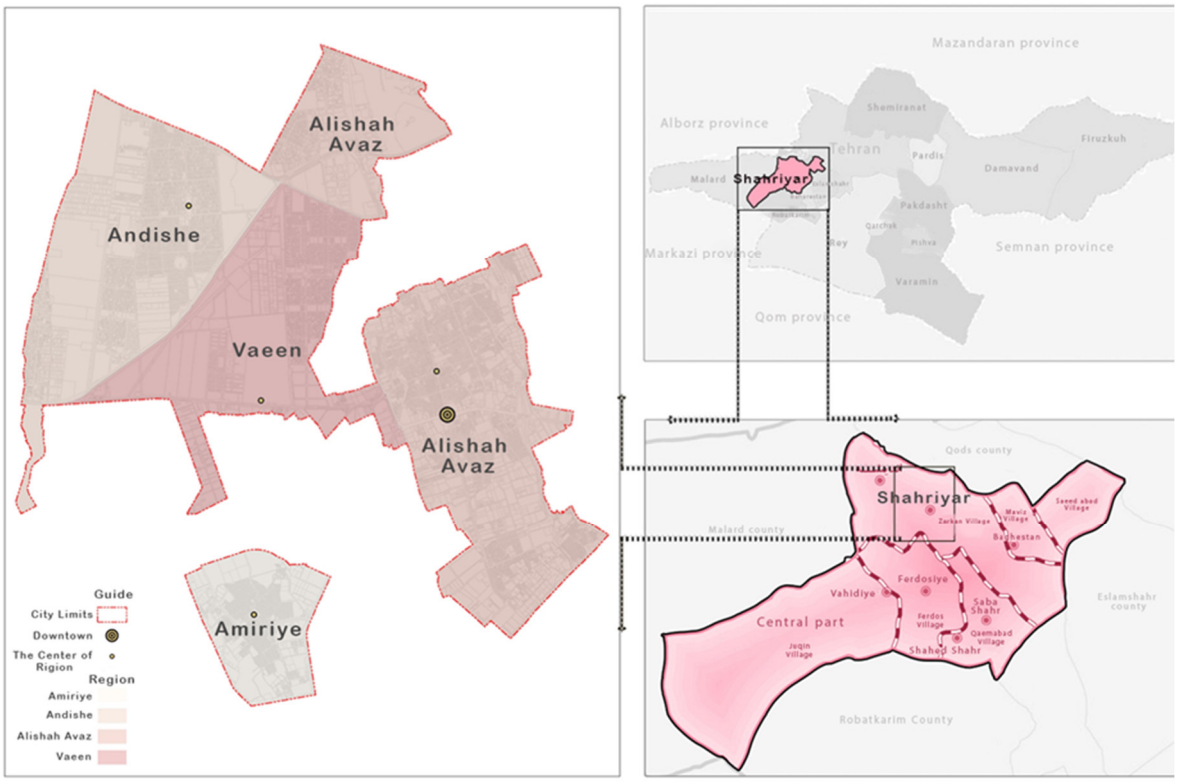


Figure 1. the plan of Shahriar City, Authors

2.2 Steps to conduct research citizens

The time frame of this research is 2020 and the location of the city of Shahriar is shown in Figure 1. This research is a type of cognitive research (geographical studies) that has been done analytically-descriptively. And the dominant method in this participatory project involves the use of public opinion, the statistical population of the research is 20 city officials and the public. All the data related to the research have been collected in the form of libraries and fields. The research steps are as follows

PRA (Participatory Rural Appraisal) method was used, in this stage the problems were categorised based on physical, environmental, communication network, urban landscape and functional dimensions that can affect the physical problems, and the frequency of repetition of each problem in this dimension was calculated. The relative coefficient was then determined by the group for each of the problems.

The relative coefficient has been obtained according to the studies of knowledge of the studied area (Shahryar city), documents related to it, such as the development and construction plan document of Shahryar city and the urban complex document of Tehran, field visit. According to the impact of each issue on the city, a relative coefficient has been assigned to it, the sum of which is one for all the issues raised, the numerical relative coefficient is between 0 and 1 (finally the total relative coefficient should be 1).

1) Provide a table of strengths, weaknesses, opportunities, and threats:

To create a SWOT (Strengths, Weaknesses, Opportunities, and Threats) table, the internal and external factors are identified. Gather information from within the organization. This involves conducting interviews or surveys with employees, managers, or residents and relevant experts and using the PRA method and obtaining comments from residents of the area.

2) Strategic analysis of the table of strengths, weaknesses, opportunities and threats:

After compiling and presenting the mentioned table in order to analyze and compare it strategically, the items in the table have been classified into internal and external factors, and each of the strengths and weaknesses has been compared with the opportunities and threats that matched ( Strengths and weaknesses as internal factors and opportunities and threats as external factors are cross-compared) and finally turn potential positive points into actual positive points and their output is a series of strategies to solve problems, which are used for prioritization in the next steps.

3) Review and score strategies using the QSPM method:

The QSPM method is valuable for analyzing a SWOT analysis because it offers a structured and quantitative framework to assess and prioritize strategic options. It provides an organized and numerical approach for

 

evaluating strategies based on internal and external factors, allowing for objective comparisons and decision-making. By integrating the SWOT analysis with the QSPM, organizations can effectively prioritize strategies, consider their potential impact, and make informed decisions about the best course of action. This combination enhances the analysis's structure, reliability, and facilitates strategic planning. We do this by separating the internal and external factors and determining the coefficient and score for strengths, weaknesses, opportunities and threats. Coefficients are determined based on the impact of each issue on the city. For internal factors, the sum of the coefficients of all the strengths and weaknesses and for external factors the sum of all the opportunities and threats should be equal to 1. Scores for different subjects range from 4-1. These scores are determined based on the city's response to different cases. In fact, the success rate of the city is in using the opportunities and strengths and repelling and not using the weaknesses and threats. Finally, for each subject, a final score is determined which is equal to the product of the coefficients multiplied by the scores. Then, based on the sum of the final scores, we draw the matrix of the situation of the city based on internal and external factors to determine the strategy of the city. In this method, according to the table below, the internal factors (IFEM) are located on the upper side of the matrix and the external factors (EFEM) are located on the side of the matrix. The division of factors into internal and external categories in the QSPM analysis captures the different influences on an organization's strategic options. Internal factors represent the organization's strengths and weaknesses, while external factors encompass opportunities and threats from the external business environment. This division enables a comprehensive evaluation of strategic options and informed decision-making. Specify the numbers of internal and external factors, which are a number between 4-1, on the matrix and specify their intersection in Figure 2, which characterizes the strategy.

Table 1. QSPM method (Almasi Hassan and Marjan Sadat Dourfard, 2011)

| | IFEM 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| 3 | 1 | 2 | 3 | |
| EFEM2 | 4 | 5 | 6 | |
| 1 | 7 | 8 | 9 | |

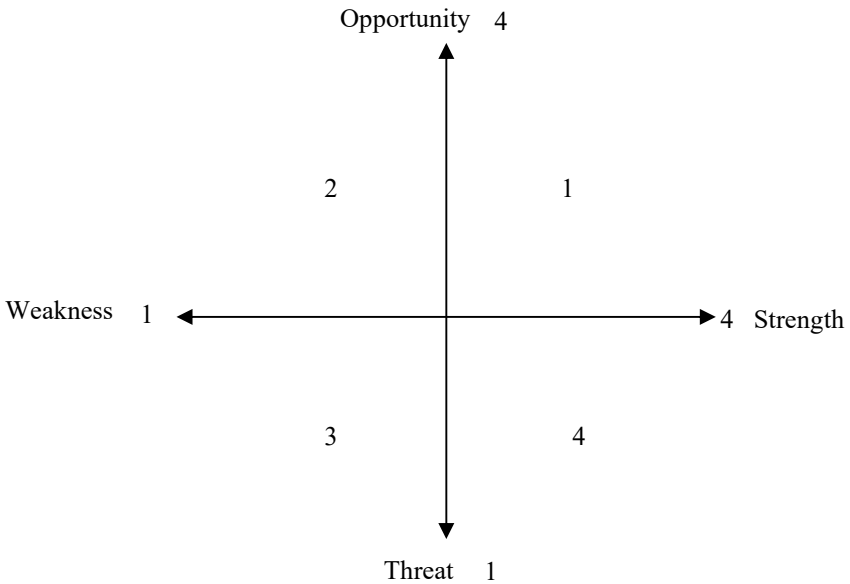


Figure2. Determining the area of strategy to be implemented (Golkar, 2005)

4) Determining the type of strategy implemented for the city of Shahriar
5) List of strategies according to their type and their scoring and prioritization based on internal and external factors, facilities and constraints, and selection of optimal strategies:

After determining the score for each strategy, the best strategy with the highest score is determined by comparing internal factors (strengths and weaknesses) with it, and strategies can be prioritized for the city according to the following method. After determining the coefficients for each case, we set up a table for each strategy derived from SO-ST-WO-WT. The SWOT table was formed to understand the strengths and opportunities of the city and to determine the appropriate strategy (Table 2). Strategies emerged from the table to adopt the best strategies, strengths and weaknesses (internal factors) and opportunities and threats (external factors) were given

 

a coefficient according to the impact on the city and each case with the strategies obtained from the analysis SWOT strategies were compared and the final score of the effectiveness in solving the problem was given (Table 5). By summing the points of strength, weakness, opportunity and threat, a diagram of the type of intervention in the city was drawn (Figure 4). The problems of the city were also classified as weaknesses and threats, and by putting together similar cases, the strategic analysis of the SWOT table was done. For each of these factors, a coefficient of 4-0 must be given. This coefficient is based on the degree of the influence of factors and strategy. Then we multiplied these absorption coefficients in the coefficients obtained from the QSPM matrix, the sum of which determines the final score of each strategy in the prioritization. A strategy with a higher score is the optimal strategy to implement and is prioritized. (Arabi, 2011)

## 3. Results and Discussion

One of the major issues of today's cities is the physical and environmental dimensions, which are being forgotten nowadays. Among the problems that our cities are struggling with every day, addressing the physical issues that form the basis of citizens' daily lives is one of the most important issues. It is necessary to try to eliminate and modify it. Due to this issue, the present report has been prepared based on the environmental and physical characteristics of the Shahriar city and in order to guide and control the development of this area and finally organize its physical condition. In order to achieve the goals in compiling the document of this research, after specifying the study area and conducting cognitive studies in areas related to the subject, qualitative methods have been used to determine the priority of cognitive issues and problems. Then, based on the obtained framework, the strategic statement of the city is formed.

3.1 Determining the most important problems related to different areas of Shahriar by PRA method and scoring by QSPM method, and comparing them

According to Table 2, the most important problems of each dimension with the PRA method included the following:

- Destruction of fruitful and unfruitful gardens and its conversion into another use and drying of the city's natural resources with a relative coefficient of 0.06 (in Shahriar we are witnessing illegal constructions and loss of green resources).
- Mixing of internal and external urban networks due to discontinuous urban form with a relative coefficient of 0.05 (in Shahriar due to non-compliance with the principles of road construction and internal and external traffic planning is merged)
- Imbalance of physical and service capacities (the increase of city population was not in line with the increase of services) with a relative coefficient of 0.05
- Construction around the Garmdareh compressive fault to the east and the Kazemabad sub-fault with drift mechanism to the southeast of the Shahriar with a relative coefficient of 0.05

Also, the most important problems of each dimension with the QSPM method included the following:

- Destruction of fruitful and non-fruitful gardens and turning it into another use and drying of the city's natural resources with a final score of 3.6 (in Shahriar we are witnessing illegal construction and loss of green resources)
- Mixing of the internal and external urban network due to disconnect urban form with a final score of 2.85 (in Shahriar due to non-compliance with the principles of road construction and internal and external traffic planning are merged)
- Imbalance of physical and service capacities (increase in the population of the city is not in line with the increase of services) with a final flow of 2.8
- Construction around Garmdareh pressure fault to the east and Kazemabad sub-fault with drift mechanism to the southeast of Shahriar with a final score of 2.25

 

Table 2. Scoring by the QSPM method

| | Classification of issues related to the physical realm | Number of repetitions | Final coefficient PRE | low Importance | To some extent | Important | Very important | Total | Final coefficient QSPM |
|---|---|---|---|---|---|---|---|---|---|
| Issues related to the field of Environment | 1 Destroying fruitful and non-fruitful gardens and turning them into urban uses and clearing the plains of natural vegetation | 18 | 0.06 | 6 | 9 | 28 | 15 | 60 | 3.6 |
| | 2 Air pollution, water resources and other resources necessary for the livelihood of citizens | 12 | 0.03 | 12 | 12 | 4 | 0 | 29 | 0.87 |
| | 3 Connection of the hydrological unit of the basin with the city of Tehran | 6 | 0.02 | 2 | 9 | 4 | 0 | 16 | 0.32 |
| | 4 Wrong patterns of consumption and drop in groundwater aquifers by 2.5 meters per year | 15 | 0.04 | 6 | 21 | 16 | 0 | 44 | 1.76 |
| | 5 Construction around Garmadreh pressure fault to the east and Kazemabad sub-fault with drift mechanism to the southeast of Shahriar | 13 | 0.05 | 4 | 12 | 24 | 5 | 45 | 2.25 |
| | 6 Conflict between sand mining and protection of natural resources | 8 | 0.02 | 2 | 12 | 8 | 0 | 23 | 0.46 |
| | 7 Lack of urban and public green space | 14 | 0.02 | 4 | 9 | 224 | 10 | 48 | 0.96 |
| | Total | 86 | 0.24 | 36 | 84 | 108 | 30 | 265 | **10.22** |
| Issues related to the field of communication network | 8- Non-observance of the access network hierarchy in relation to the four urban centers of Shahriar City | 12 | 0.06 | 4 | 9 | 24 | 5 | 42 | 2.52 |
| | 9 Mixed of inner and outer city network due to discontinuous form of city | 17 | 0.05 | 4 | 15 | 32 | 5 | 57 | 2.85 |
| | 10 Unintentional traffic within urban areas | 18 | 0.035 | 4 | 24 | 12 | 10 | 53 | 1.85 |
| | 11 Heavy vehicle traffic from inner-city axes | 15 | 0.03 | 8 | 21 | 12 | 5 | 46 | 11.38 |
| | 12 Incompatibility of the structure of the passages with the volume of passing traffic | 13 | 0.04 | 2 | 9 | 28 | 15 | 5 | 2 |
| | 13 Improper geometric designs of some nodes and passages | 15 | 0.03 | 4 | 12 | 28 | 5 | 50 | 1.5 |
| | 14 Lack of proper access to land uses due to the network of organic thoroughfares | 12 | 0.025 | 6 | 12 | 16 | 0 | 35 | 0.875 |
| | 15 Weak public transportation system in the city | 17 | 0.04 | 6 | 12 | 24 | 10 | 54 | 2.16 |
| | 16 Low level of safety of passenger and pedestrian traffic and lack of equipment at intersections | 12 | 0.03 | 2 | 9 | 24 | 10 | 45 | 1.35 |
| | 17 Lack of multidimensional terminals at the district and city level | 9 | 0.03 | 6 | 12 | 8 | 0 | 26 | 0.78 |
| | 18 Non-observance of the privacy of suburban and inner-city roads and construction in them | 10 | 0.03 | 6 | 15 | 4 | 5 | 30 | 0.9 |
| | 19 Not having enough money to buy a bus and public transportation | 7 | 0.02 | 8 | 6 | 4 | 0 | 18 | 0.36 |
| | 20 High accumulation of surface water in the main routes | 14 | 0.03 | 4 | 18 | 16 | 10 | 48 | 1.44 |
| | Total | 171 | 0.45 | 64 | 174 | 228 | 80 | 554 | **19.98** |
| Issues related to the field of appearance and urban landscape | 21 Uncoordinated quality of building facade | 13 | 0.03 | 10 | 12 | 8 | 5 | 36 | 1.08 |
| | 22 Lack of green space in sidewalks and neighborhood centers | 14 | 0.02 | 4 | 9 | 24 | 10 | 48 | 0.96 |
| | 23 Surface water accumulation and its disposal problems | 14 | 0.03 | 4 | 18 | 16 | 10 | 48 | 1.44 |
| | Total | 41 | 0.08 | 18 | 39 | 48 | 25 | 132 | **3.48** |
| Issues related to the field of Function | 24 Ruins of the city and its settlements and problems in providing services and providing infrastructure in it | 16 | 0.03 | 4 | 15 | 32 | 5 | 56 | 1.68 |
| | 25 Imbalance of demographic, physical, and service capacities | 17 | 0.05 | 4 | 21 | 20 | 10 | 56 | 2.8 |
| | 26 Increase in illegal density in most places | 13 | 0.04 | 4 | 12 | 24 | 0 | 41 | 1.64 |
| | 27 Lack of basic jobs in industry and services | 11 | 0.02 | 8 | 15 | 4 | 5 | 32 | 0.64 |
| | 28 Reduction of the percentage of employees in the agricultural sector | 8 | 0.04 | 4 | 12 | 4 | 0 | 21 | 0.84 |
| | 29% reduction in the number of employees in the industrial sector | 6 | 0.02 | 4 | 9 | 4 | 0 | 17 | 0.34 |
| | 30 Lack of cultural-recreational passages, etc. | 16 | 0.02 | 4 | 15 | 25 | 15 | 59 | 1.18 |
| | Improper location of the cemetery | 6 | 0.01 | 2 | 12 | 4 | 0 | 18 | 0.18 |
| | Total | 93 | 0.23 | | | | | 300 | **9.3** |

3.1.1Comparison of the most important problems with PRA and QSPM methods

According to Table 3 and Figure 3, the aim is to examine the priority of issues in the PRA and QSPM methods and compare them.

In this part, in the table below, the frequency and proportion of problems in each of the environmental dimensions, communication network, image and landscape and performance are given, which determines the

 

prioritization of solving the problems. The prioritization of problems is determined using the sum of the final coefficient (Final coefficient QSPM) of each area (Table 3) (Figure 3).

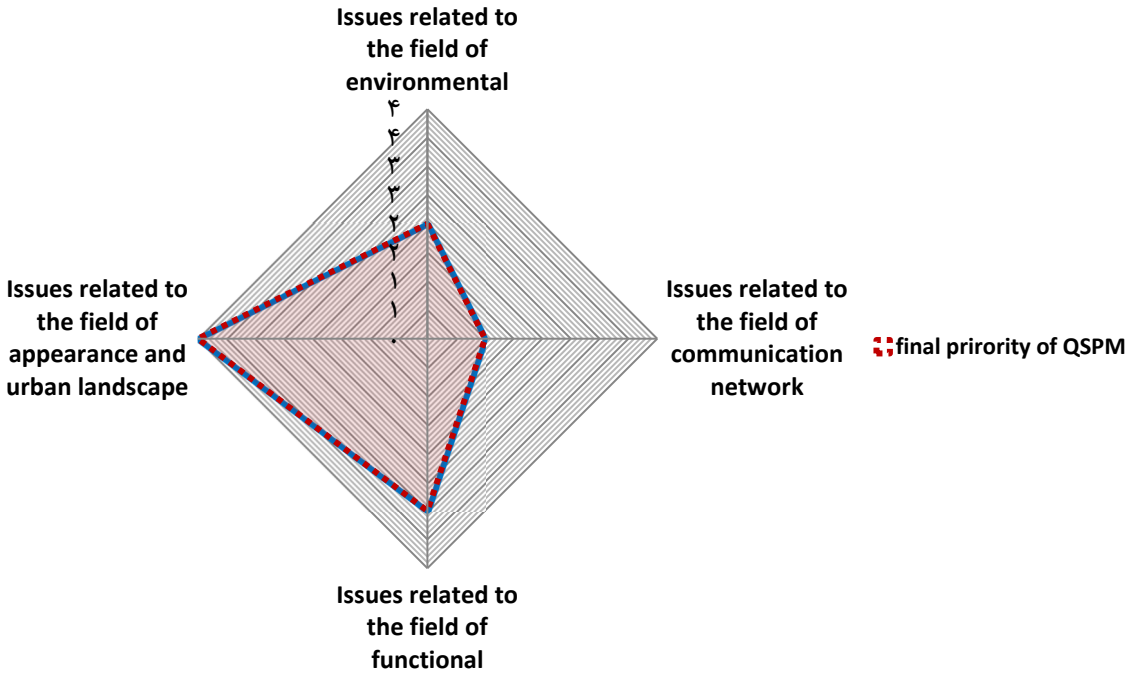


Figure3. Prioritization of city issues and problems

Table 3. Determining the priority of dimensions, environmental, communication, appearance and performance

| Issues related to the field of Function | | Issues related to the field of appearance and urban landscape | | Issues related to the field of communication network | | Issues related to the field of Environment | | main factors |
|---|---|---|---|---|---|---|---|---|
| (Final score) | | (Final score) | | (Final score) | | (Final score) | | Sample area |
| Ratio | Abundance | Ratio | Abundance | Ratio | Abundance | (Final score) | Abundance | Shahriar city |
| 0.23 | 93 | 0.08 | 41 | 0.45 | 171 | 0.24 | 86 | Local people PRA |
| 3 | | 4 | | 1 | | 2 | | priority PRA |
| 9.3 | | 3.48 | | 19.97 | | 10.22 | | QSPM Final score |
| 3 | | 4 | | 1 | | 2 | | Final priority QSPM |

The first priority in the PRA method is the communication network with a score of 19.97 and the second priority is the environmental dimension with a score of 10.22, then the functional area with a score of 9.3, and finally the urban landscape with a score of 3.48. The direction in Figure 3 shows the priority based on the PRA and QSPM, and we need to do more actions in that area.

3.2 Reviewing and scoring strategies using the QSPM method

According to the table, the weaknesses in communication networks have been more. Due to a large number of tables not included in the article. After examining the internal factors and scoring, we can say that according to Table 4, the most important Strategies based on internal factors are the existence of orchards and agricultural lands and fruit supply with a score of 0.18 and proximity to the mother city with a score of 0.16.

 

Table 4. Scoring of internal factors by the QSPM method

| Internal factors | Coefficient | Score | Final score |
|---|---|---|---|
| Existence of gardens and agricultural lands and supply of strong fruit | 0.06 | 3 | 0.18 |
| Proximity to the mother city | 0.04 | 4 | 0.16 |
| Existence of barren lands as an opportunity for development | 0.025 | 2 | 0.05 |
| Existence of formation of various industrials and service activities along with the previous role of agriculture | 0.04 | 1 | 0.04 |
| Suitable climatic conditions for tourism and the formation of recreational complexes | 0.02 | 2 | 0.04 |
| The fertility of Shahriar lands and villages in the southern suburbs and absorbers of agricultural activities | 0.04 | 2.5 | 0.1 |
| The smoothness of the area and the necessary space for the development of the road network | 0.02 | 1 | 0.02 |
| Existence of diversity in the urban context | 0.01 | 1 | 0.01 |
| Legalization of some constructions after municipalities supervise informal settlement areas | 0.03 | 1 | 0.03 |
| Expensive access to users due to disproportionate weakness in their distribution | 0.04 | 3 | 0.12 |
| Application of traditional methods in agriculture and consequently low yield in some crops (barley and legumes) | 0.05 | 2 | 0.1 |
| Inequality of job opportunity distribution between the cities of the constituency | 0.04 | 2 | 0.08 |
| Cultural problems and weak participation due to population heterogeneity and high ethnic diversity | 0.02 | 1 | 0.02 |
| Existence of poverty and marginalization in some urban areas | 0.04 | 1 | 0.04 |
| Heterogeneity in population density rates of different parts | 0.04 | 2 | 0.08 |
| Destroying productive and non-productive gardens and turning them into urban uses and clearing the plains of natural vegetation | 0.05 | 1 | 0.05 |
| Air pollution, water resources and other resources necessary for the livelihood of citizens | 0.01 | 1 | 0.01 |
| Existence of Garmadreh compressive fault to the east and Kazemabad sub-fault with the drift mechanism to the southeast of Shahriar | 0.04 | 1 | 0.04 |
| Non-observance of the access network hierarchy in relation to the four urban centers of Shahriar city | 0.02 | 1 | 0.02 |
| Mixing of inner and outer city network due to the discontinuous form of city | 0.02 | 1 | 0.02 |
| Unintentional passage through an urban area | 0.03 | 1 | 0.03 |
| Incompatibility of the structure of the passages with the volume of passing traffic | 0.03 | 2 | 0.06 |
| Weak public transportation system in the city | 0.05 | 1 | 0.05 |
| Low level of safety of passenger and pedestrian traffic and lack of equipment at intersections | 0.025 | 1 | 0.025 |
| Non-observance of the privacy of suburban and inner- city roads and construction in them | 0.02 | 1 | 0.02 |
| Lack of integrated management | 0.05 | 1 | 0.05 |
| The weakness of expert force in urban management | 0.02 | 1 | 0.02 |
| The weak sources of income and reliance on unstable incomes | 0.04 | 1 | 0.04 |
| Imbalance of demographic, physical, and service capacities | 0.025 | 2 | 0.05 |
| Lack of defined urban structure in the city | 0.02 | 1 | 0.02 |
| Lack of per capita urban public services due to the conversion of service lands into residential uses | 0.02 | 1 | 0.02 |
| Lack of proper sewerage network coverage | 0.015 | 1 | 0.015 |
| Total | 1 | | 1.61 |

 

Table 5. Scoring of external factors of the Shahriar city by the QSPM method

| External factors | Coefficient | Score | Final score |
|---|---|---|---|
| The possibility of improving the existing industries in the city and the prosperity of the opportunity economy | 0.03 | 1 | 0.03 |
| Possibility of optimal use of Shahriar environmental potentials through modern agricultural methods | 0.07 | 2.5 | 0.175 |
| Possibility to use the economic advantages of the mother city | 0.05 | 3 | 0.15 |
| Increasing the cost of activity and housing in Tehran and the comparative advantage of the constituency in these respects | 0.03 | 3 | 0.09 |
| Possibility of using empty space to create places of public gathering and emergency accommodation | 0.03 | 1 | 0.03 |
| Possibility of developing a traffic and transportation unit management in the area | 0.03 | 1.5 | 0.045 |
| Possibility of removing or reducing the heavy traffic load during peak hours of the area | 0.01 | 1 | 0.01 |
| Possibility to improve the public transportation system | 0.04 | 2 | 0.08 |
| Possibility to modify and define the input and output of cities | 0.02 | 1 | 0.02 |
| Possibility of adopting a new approach in urban planning (strategic-structural) | 0.05 | 1 | 0.05 |
| Ability to use new tools when updating map information | 0.04 | 2 | 0.08 |
| Opportunity to identify neighborhoods using historical elements and features | 0.02 | 1 | 0.02 |
| Possibility of forming recreational and camp complexes | 0.04 | 2 | 0.08 |
| Risk of destroying the advantages of the field (tourism, agriculture, non-invasive industries, etc.) due to lack of proper planning | 0.04 | 1 | 0.04 |
| Risk of economic damage to agriculture due to the use of water rights to supply drinking water in Tehran | 0.05 | 1 | 0.05 |
| Social threats from eroded tissues and barren lands | 0.03 | 1.5 | 0.045 |
| The growing trend of unemployment problems due to the lack of job opportunities for the active population | 0.04 | 1 | 0.04 |
| The danger of population leaving the city and lack of sustainable development programs at the national level to prevent it | 0.04 | 1.5 | 0.06 |
| The danger of destruction of groundwater resources and all their related uses due to exploitation of sand mines | 0.05 | 1 | 0.05 |
| The danger of polluting activities to the watershed due to the limited establishment in Tehran | 0.03 | 1 | 0.03 |
| Risk of widespread land degradation due to lack of a provincial plan to preserve agriculture and regenerate gardens | 0.06 | 1 | 0.06 |
| Risk of the greater vulnerability of the region to earthquakes due to the emptiness of the ground due to severe decline in groundwater aquifers | 0.03 | 1 | 0.03 |
| Risk of intensifying functional dependence on Tehran and increasing the volume of traffic between the constituency and the capital | 0.035 | 1 | 0.035 |
| Probability of crossing the constituency according to its location | 0.03 | 1 | 0.03 |
| Risk of disruption in the management system due to conflicting rules | 0.03 | 1 | 0.03 |
| The possibility of improper use of the prepared plans due to poor implementation | 0.02 | 1 | 0.02 |
| The possibility of increasing problems due to the revenues of executive systems | 0.025 | 1 | 0.025 |
| Possibility of continued development along suburban axes | 0.03 | 1 | 0.03 |
| Total | 1 | | 1.435 |

After examining external factors and scoring, we can say that according to Table 5, the most important strategies based on internal factors are the possibility of optimal use of Shahriar environmental potentials through modern agricultural methods with a score of 1.75 and also the possibility of use of the economic advantages of the mother city with a score of 0.15.

The SWOT table was formed to understand the strengths and opportunities of the city and to place the

 

problems of the city in the category of weaknesses and threats, and by putting together the similar cases, the strategic analysis of the SWOT table was done. Then, strengths and weaknesses in the category of internal factors and opportunities and threats in the category of external factors were given a coefficient according to the impact on the city, and each case was compared with the strategies obtained from the SWOT strategic analysis, and the final score of the impact was problem was given (Table 4). By summing the points of strengths, weaknesses, opportunities and threats, a graph of the type of intervention in the city was drawn (Figure 4) and the strategies with the highest scores were also identified.

3.3 Determining the type of strategy implemented for Shahriar City

According to Figure 4, the collision of internal factors 1.61 and external factors 1.435 is located in zone 3 (defensive strategy). This means that in the city of Shahriar, the main focus and measures and strategies should be on threats and weaknesses (WT), that is, threats should be eliminated or isolated and weaknesses should be reduced.

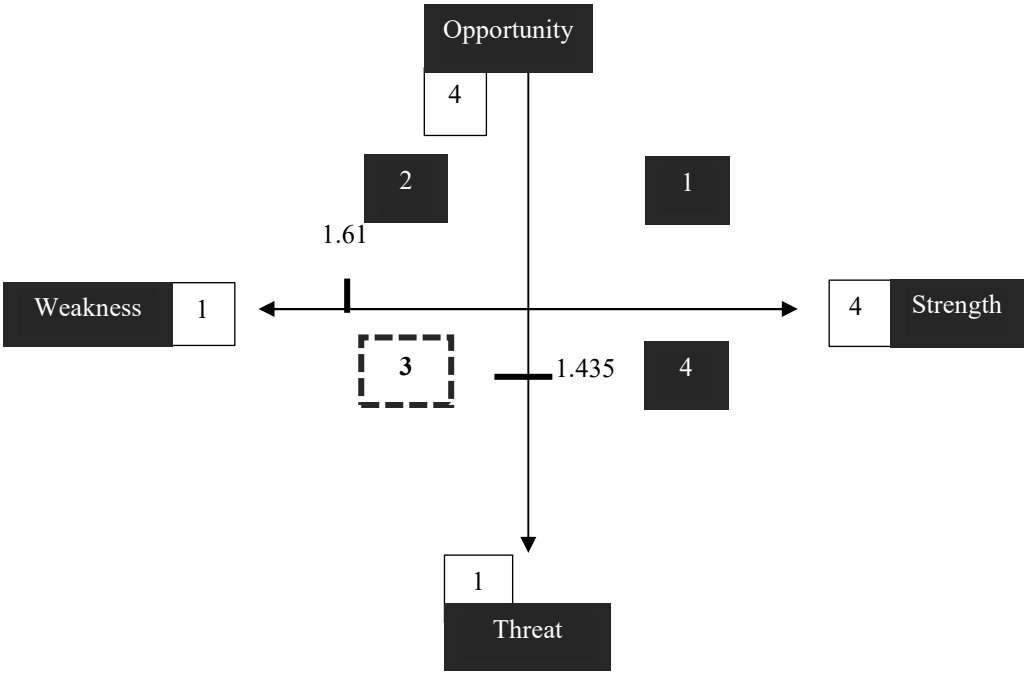


Figure4. determining the type of intervention strategy of Shahriar city

3.4 list of strategies according to their type and scoring and prioritizing them based on factors, internal and external limitations, and selection of optimal strategies

In the decision-making stage, in order to determine the relative attractiveness of the emphasized strategies, the quantitative strategic planning matrix method has been used. Thus, the various strategies that are among the best strategies have been quantified. The prioritization of strategies based on the scores obtained from internal and external factors is as follows.

- Strategies with the highest score based on internal factors
    1. Improving the level of quality of life and livability of citizens' living environment
    2. Considering the limit of development or slowing down the growth and development of the city and attracting its population in urban planning
    3. Identifying neighborhoods and preserving diversity and urban contexts in order to increase the belonging and security of residents
- Strategies with the highest score based on external factors
    1. Using the appropriate location of the city to take advantage of the potentials of the mother city
    2. Improving the quality of life and livability of citizens' living environment
    3. Preservation of orchards and fertile lands to reduce environmental drought and flood risk

To measure the prioritization of strategies with external factors, the possibility of optimal use of Shahriar environmental potential through modern agricultural methods by preserving orchards and fertile lands to reduce environmental drought and flood risk with a score of 0.28 is the most important strategy for external factors. For internal factors, Orchards and agricultural lands and fruit supply and development factor and improvement of the agricultural situation of the city, and achieving agricultural self-sufficiency with a score of 0.24 are the first priorities. In general, using the appropriate location of the city to take advantage of the potential of the mother city

 

Citizens with a score of 3.9 is the most effective strategy based on the external factor and improving the quality of life and livability of the living environment citizens with a score of 1.99 are the most important strategy based on the internal factor.

## 4. Conclusion

In this study, the city of Shahriar as a community, due to the uncontrolled population growth that has created physical environmental problems was studied. Due to its importance in suburban communities a participatory method was adopted. According to the outcomes the most important problems include:

Horizontal expansion of urban and non-urban constructions and intensification of environmental drought decreased of groundwater aquifers by 2.5 meters per year due to lack of definition of specific consumption pattern, the high vulnerability of the region to earthquakes was due to the emptiness of the land and the unsustainability of construction.

By examining the problems by PRA and QSPM method, we came to the conclusion that the first priority is the communication network; the second priority is the environmental dimension, then the functional area, and finally the appearance and urban landscape. According to the SWOT table, there are more weaknesses in the field of communication networks. Due to the proximity of this city to the two metropolises of Tehran and Karaj, measures should be taken to establish better communication in order to improve the Shahriar's inner and outer city access networks. And after examining the internal and external factors of the Shahriar, as a suburban community, need a defensive strategy to solve problems this means that in Shahriar, threats must be eliminated or isolated, and weaknesses must be reduced.

One of the most important strengths is the diverse and abundant orchards, the pleasant climate, and the vast agricultural lands. And one of the opportunities is the possibility of introducing the environmental potentials of Shahriar and one of the worst threats is the risk of destruction of groundwater resources and all their related uses due to the exploitation of sand mines. The most important strategies with the highest score based on internal factors improve the quality of life and livability of citizens' living environment, considering the extent of development or slowing down the growth and development of the city and attracting its population in urban planning, identification of neighborhoods and preservation of the diversity of urban contexts to increase the belonging and security of residents and strategies with the highest score based on external factors include, using the appropriate location of the city to take advantage of the potential of the mother city, improving the quality of life and livability of citizens, gardens Fruits, and fertile lands are designed to reduce environmental drought and flood risk. Therefore, with proper planning, the process of construction and destruction of the human environment should be prevented, and attention to the environment should be included in urban plans and due to the importance of the environment, more research is needed in this field because the city is being disturbed day by day and the environment is in danger of extinction.

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