Artículo de investigación

Livability analysis of Iranian cities and strengthening strategies (Case study: old areas of Zabol, Iran)

Análisis de habitabilidad de ciudades iraníes y estrategias de fortalecimiento (Estudio de caso: áreas antiguas de Zabol, Irán)

Análise de habitabilidade das cidades iranianas e estratégias de fortalecimento (Estudo de caso: áreas antigas de Zabol, Irã)

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Abstract

Today, cities are facing many economic, social and environmental challenges. Meanwhile, population growth with an ever-increasing proportion of urbanization has led to adverse effects on cities. The continuation of this urbanization is associated with social, economic, environmental problems, leading to crisis and urban instability. In the meantime, other problems such as different types of pollution, traffic, and psychological problems greatly reduce the quality of life and, consequently, the livability of cities. Therefore, the necessity and importance of livability and sustainable development in cities is quite evident. Livability and sustainable development are approaches which ultimately result in cities free from different types of pollutions, traffic, and social, environmental, economic, and physical problems. The purpose of this study is to identify the internal and external factors affecting the livability of the old region of Zabol, Iran in terms of strengths, weaknesses, opportunities, ad threats and assess the livability capabilities. It also offers the best strategies using the time-spatial considerations in line with the sustainable development. SWOT technique was applied to identify the environmentally internal (weaknesses and strengths) and external (opportunities and threats) accelerating and slowing down factors and offer practical and scientific strategies in order to strengthen the livability in the study area. AHP was employed to prioritize the strategies. This is a descriptive-

Resumen

Hoy en día, las ciudades enfrentan muchos desafíos económicos, sociales y ambientales. Mientras tanto, el crecimiento de la población con una proporción cada vez mayor de la urbanización ha tenido efectos adversos en las ciudades. La continuación de esta urbanización está asociada con problemas sociales, económicos y ambientales que conducen a la crisis y la inestabilidad urbana. Mientras tanto, otros problemas como los diferentes tipos de contaminación, el tráfico y los problemas psicológicos reducen en gran medida la calidad de vida y, en consecuencia, la habitabilidad de las ciudades. Por lo tanto, la necesidad y la importancia de la habitabilidad y el desarrollo sostenible en las ciudades es bastante evidente. La habitabilidad y el desarrollo sostenible son enfoques que finalmente resultan en ciudades libres de diferentes tipos de contaminación, tráfico y problemas sociales, ambientales, económicos y físicos. El propósito de este estudio es identificar los factores internos y externos que afectan la habitabilidad de la antigua región de Zabol, Irán en términos de fortalezas, debilidades, oportunidades, amenazas publicitarias y evaluar las capacidades de habitabilidad. También ofrece las mejores estrategias usando las consideraciones espaciotemporales en línea con el desarrollo sostenible. La técnica SWOT se aplicó para identificar los factores de aceleración y desaceleración ambientalmente (debilidades y

analytical field and desk studies. The results of SWOT-AHP model based on the pairwise comparison at different decision-making and hierarchical structure (tree) levels of this model (choices, criteria, and goal) show that the defensive strategy (with the score of 0.367) yields relative superiority compared to other four strategies. Therefore, livability strengthening strategies need to be determined in a way to meet the weaknesses, remove the threats, and optimize the livability status quo using a detailed and strategic planning approach. **Key Words:** Livability, Strategy, Zabol.

fortalezas) y externos (oportunidades y amenazas) y ofrecer estrategias prácticas y científicas para fortalecer la habitabilidad en el área de estudio. AHP fue empleado para priorizar las estrategias. Este es un campo descriptivo-analítico y estudios de escritorio. Los resultados del modelo SWOT-AHP basados en la comparación por pares a diferentes niveles de toma de decisiones y estructura jerárquica (árbol) de este modelo (elecciones, criterios y objetivos) muestran que la estrategia defensiva (con el puntaje de 0.367) produce una superioridad relativa en comparación con otras cuatro estrategias. Por lo tanto, las estrategias de fortalecimiento de la habitabilidad deben determinarse de forma que se cumplan las debilidades, se eliminen las amenazas y se optimice el status quo de la habitabilidad mediante un enfoque de planificación detallado y estratégico. **Palabras clave:** Habitabilidad, estrategia, Zabol, urbanización, desarrollo sostenible.

Resumo

Hoje, as cidades enfrentam muitos desafios econômicos, sociais e ambientais. Enquanto isso, o crescimento da população com uma proporção crescente de urbanização teve efeitos adversos nas cidades. A continuação dessa urbanização está associada a problemas sociais, econômicos e ambientais que levam à crise e à instabilidade urbana. Enquanto isso, outros problemas, como diferentes tipos de poluição, problemas de tráfego e psicológicos reduzem enormemente a qualidade de vida e, consequentemente, a habitabilidade das cidades. Portanto, a necessidade e a importância da habitabilidade e do desenvolvimento sustentável nas cidades é bastante evidente. Habitabilidade e desenvolvimento sustentável são abordagens que acabam resultando em cidades livres de diferentes tipos de poluição, tráfego e problemas sociais, ambientais, econômicos e físicos. O objetivo deste estudo é identificar os fatores internos e externos que afetam a habitabilidade da antiga região de Zabol, o Irã, em termos de pontos fortes, pontos fracos, oportunidades, ameaças de publicidade e avaliar as capacidades de habitabilidade. Também oferece as melhores estratégias usando considerações espaço-temporais em linha com o desenvolvimento sustentável. A técnica SWOT foi aplicado para identificar aceleração fatores e desaceleração (forças e fraquezas) e externo (oportunidades e ameaças) ambientalmente e fornecer práticas científicas e fortalecer a habitabilidade nas estratégias da área de estudo. O AHP foi usado para priorizar as estratégias. Este é um estudo descritivo-analítico e estudos de mesa. comparação pareada Os resultados do modelo SWOT-AHP com base em diferentes níveis de tomada de decisão e estrutura hierárquica (árvore) deste modelo (eleições e critérios objetivos) mostram que a estratégia defensiva (com pontuação 0367) produz uma superioridade relativa em comparação com outras quatro estratégias. Portanto, as estratégias para fortalecer a habitabilidade devem ser determinadas de forma que as fraquezas sejam atendidas, as ameaças eliminadas e o status quo da habitabilidade seja otimizado por meio de uma abordagem detalhada e de planejamento estratégico. **Palavras-chave:** Habitabilidade, estratégia, Zabol, urbanização, desenvolvimento sustentável.

Introduction

Cities are the driving force behind economic growth, the providers of job opportunities and services, and the creators of quality of life. Yet, the rapid growth of cities and the rise of impoverished neighborhoods can affect the urban environment and lead to the failure of citizens' welfare. The aforementioned topics point to various social and economic inferences, of great importance in urbanization. Cities become dynamic when the wise city development takes the quality of human life into account in different aspects

(Salmani et al., 2012). As a livable texture, cities play a key role in creating the sense of satisfaction. They, in fact, shape the human's lifestyle and determine the quality of life. Therefore, paying attention to the city's physical environment plays an important role in improving the quality of life. Human habitats and the sense of attachment to the environment are far more effective than the demographic and socio-economic factors in the quality of life. In other words, cities are the manifestation of human life within an organized frame in which, like containers, people are interacting with their surrounding environment (Rahnamaee & Shah Husseini, 2006). With the mere impact on the concrete aspects of development (growth), rapid urbanization growth, especially in post- World War II years, not only made development possible but also added to the deterioration of the objective and subjective quality of Third World cities. The emergence of different types of inequalities, widespread poverty, environmental degradation, malnutrition, and uneven urban development are only a few adverse effects of such measures. These apparent differences in the quality of urban life clearly emerged with the accumulation of the 19th-century growing settlements that led to the emergence of the gulf of wealth and poverty, which proved to be an appropriate evidence of the fact that the urban development process was intrinsically problematic, associated with social-spatial diversity and division (Bandar Abad, 2011). However, development, initially influenced by the modernization theory (1960) and it considered the technical dimensions, was replaced by a new development approach, called human development. Such development considers social and cultural aspects as top priorities (Naghdi & Sadeghi, 2006). As a result, livability has gained popularity with certain purposes such as solving urban problems, promoting the urban quality of life, urban management efficiency, and the city's drive towards more desirability with respect to native and local values (Mohammadi, 2012: 105). Therefore, the purpose of this study is the livability analysis of old areas of Zabol, Iran since livability constraints in the old area along with the high development capabilities have necessitated the livability of the old area. In addition to preventing the uncontrolled development, special attention of urban management bodies leads to the dynamism of such areas.

Necessity and Importance

Studies show that, on the one hand, the urban livability in line with new planning duties has gained popularity in order to respond the post-industrialized society's needs heavily looking for facilities and quality of life and, on the other hand, livability has doubled in importance due to the urban life threats. In his study in California, Wheeler shows numerous threats affecting the urban quality of life manifested in the forms of urban growth, congestion and crowds, lack of open space, affordable housing, social injustice growth, and lost spatial identity and sense of place and social life. These issues are seen in many cities including Tehran. Numerous problems in cities are threatening the urban sustainability including traffic, land congestion, abandoned buildings, waste problems, land use change, pollution, and many others. Considering the problems cities are facing today, urban sustainable development dimensions need to be taken into account. Livable cities need to be considered in order to reach the sustainable human development. Policies and plans can be developed to meet the urban livability problems by accurate identification of capacities, strengths and shortcomings, weaknesses, and factors which cause the inequalities. This can be done through various scientific studies. The purpose of this study is to investigate the strengths, weaknesses, opportunities, and threats of urban livability. This study can play a vital role in identifying the livability trends in Zabol, Iran.

Methodology

The purpose of this study is to analyze the livability of Iranian cities and the strengthening strategies. This is a descriptive-analytical study using field and desk studies. According to the goals, the upstream documents and resources were reviewed and consultations were made with experts in order to evaluate and list the regional capabilities and livability constraints. Then AHP-SWOT was employed to analyze the information, offer solutions and strategies according to the status quo, and prioritize the executive strategies.

After evaluating the internal and external factors affecting the regional livability, strengths, weaknesses, opportunities, and threats were identified and then weighed by the experts. In the following stage, internal and external strategic factors, used for the strategy development, were found. Afterwards, AHP was developed to prioritize the factors and take the best strategies into account. AHP is a new multi-criteria decision making method (Ghafari et al., 2010). The information was analyzed in Microsoft Excel and Expert

Choice in order to rank and prioritize the SWOT strategies. Sensitivity analysis was carried out in Expert Choice in order to evaluate the changes of weights (preferences) in ranking Zabol livability strategies and the reality of the final results. A total of 30 livability, urban management, urban planning, and urbanization experts was selected as the sample to prioritize the research goals in **(Fig. 1)**.

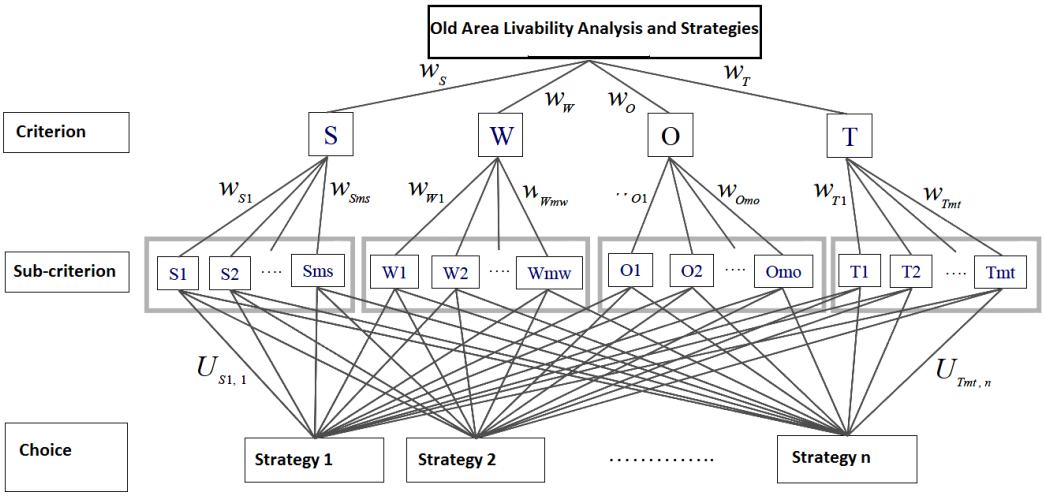

Fig. 1: AHP
Source: Author (2015)

Livability and its dimensions

Livable cities offer high quality of life and guarantee the health of people residing and working there (Department of Infrastructure and Transport, 2011, 7). Abdul Aziz believes that a livable city is citizen friendly and dynamic and it is a place where the society enjoys the friendly relationships even in multi-ethnic societies, cheap housing, and health and safety with access to all facilities. The sense of attachment is much highlighted in such communities. Veenhoven believes that livability means habitable locations and quality of life. Livability is a general term, linked with other concepts such as sustainability, quality of life, quality of place, and healthy communities (Khorasani, 2012). Douglas et al. believes that a livable city is human-oriented where human health and happiness are planned by natural and human conditions. By creating a livable city, urban space is not only an artificial place but a safe place taking care of job, residence, culture, and life. Livability is divided into three dimensions: economy, community and environment. Economy supplies job and revenue and is vital for human health such as affordability of food, clothing, and accommodation and supply of higher needs such as education, health, and recreation. At the same time, the use of economy from environmental resources needs to be in a way to ensure the sufficient resources for the existing and future generations. However, social well-being depends on justice, which is the social and spatial distribution of economic and environmental resources in a fair manner. It also covers governments considering all citizens. Individual freedom and equal opportunities are the most important components of social well-being. Environment is an infrastructure which supplies natural resources, disposal capacity, and relationship between human and natural resources. If one of these three is disturbed, human habitats can quickly collapse, leading to population decline, poverty, social conflict and rising health and environmental issues. These three golden parts follow economic productivity social justice, and environmental protection. These goals have, so far, been traditionally followed **(Fig. 2).** However, the thought was replaced by an integrated approach **(Fig. 3)** in order to achieve certain goals such as health, justice, and efficiency. This approach is the most common outlook towards the well-being dimensions (Khorasani, 2012).

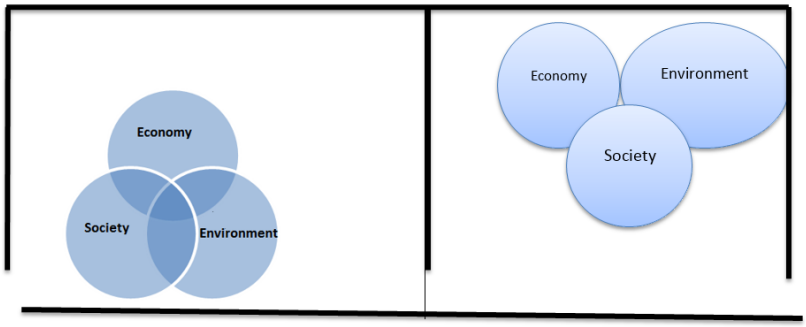

Fig.3: Interaction of society and environment in forming livability

Fig. 2: Traditional outlook towards economy, society, and environment

Source: National Research council, 2002: 22

Study area

As a strategic city of Eastern Iran, Zabol stretches from the latitude of 30 °7 ' to 31 °29 ' N and longitude of 59 °25 ' to 61 °59 ' E. Zabol is 498.2 m above the sea level and it is located in a vast plain surrounded by flat lands. It is 215 km far from Zahedan, the capital, and 700 km east of Kerman. Within the scope of the detailed plan (2010), the area is reported to be over 2084.5 hectares (1328.8 hectares of net urban lands and 755.5 hectares of gross urban land) (ibid). Regarding the geographical location, the author of Sistan Book (unknown author) believes that the prosperity of Sistan (Zabol) depends on three factors: water, sand, and blockage of corruptors in **(Fig. 4)**.

Fig. 4: Geographical location of the study area according to the topography map 1:500000 (Source: Author)

Analysis of findings

After evaluation using Delphi, the experts' opinions were collected in terms of livability strengths, weaknesses, threats, and opportunities as well as their ranking and coefficients. In this section, raw materials, W1-8, S1-10, T1-9, and Q1-10 were extracted and determined in terms of livability capabilities and potentials through the internal and external tables prevailing the livability condition (Table 1 and Table 2). In the next stage, the final total score was calculated in Expert Choice concerning the criteria (the experts' opinions were taken into account) so that the reliability and validity of the questionnaire were approved by Cronbach's alpha of 0.90.

Table 1: Internal factor analysis summary (IFAS) of old area of Zabol, Iran

Weakness (W)	Strengths (S)
W1: High proportion of Afghan population and immigrants	S1: Social cohesion of residents in old area
W2: Absence of regional social security	S2: Willingness of residents for staying in old areas
W3: The attraction of lower-class immigrants	S3: High economic value of old area
W4: Low investment in old area in recent years	S4: Tendency of residents for investment in different sectors

W5: Low residential land value in neighborhoods	S5: Establishment of a wide range of activities in the old area
W6: Insufficient urban services in residential areas	S6: High density increase capacity
W7: Inconsistency of new construction and the use of building materials and architectural patterns in the construction of the building	S7: The dominance of space over density and open spaces in the city
W8: Low building modernization tendency in neighborhoods and areas far from the main roads	S8: Acceptable literacy rate S9: High rate of active population

Source: Author (2015)

Table 2: External factor analysis summary of old area of Zabol, Iran

Challenges, limitations, and threats (T)	Opportunities and facilities (O)
T1: Low population density in old area due to low spatial density	O1: Appropriate capacity for increasing the population density and the prevention of city's horizontal development
T2: Withdrawal of main residents from old area	O2: The expansion of regional facilities and capabilities and the effects on reduced immigration
T3: High rate of social anomalies in old area	O3: Regional income opportunities through the activation of historical sights
T4: Lack of investment for attracting the active population	O4: The spirit of development, participation, and perseverance among the ethnic groups
T5: The convergence of activities and the added value resulting from the old area will gradually lead to reduced habitat.	O5: a favorable image of the citizen from old area and encouragement of location finding
T6: Increased number of residents and the evacuation gradually leads to unwillingness of the young to settle down in the area.	O6: Increased tendency of private sector for investment in this area
T7: Uncontrolled constructions and spatial development in suburbs	O7: The existence of high economic potentials to retrieve the role and function of old area
T8: Lack of attention to public participation	O8: The opportunity to increase the activity density in the activity areas and increase the role and scope of this area from the economic perspective
	O9: Tendency towards increased productivity for using urban lands
T9: High modernization cost	O10: Paying attention to factors and indicators affecting the old area design and organization
	O11: The development of criteria for organizing the spatial texture according to the limited investment attractiveness

Source: Author (2015)

In order to calculate the weights of each of criteria, pairwise comparison, and ultimately the priorities in AHP-SWOT model, AHP- made up of goals, criteria, sub-criteria, and strategies- was developed. Sub-criteria separately entered Expert Choice for the pairwise comparison of four SWOT criteria (strengths, weaknesses, opportunities, and threats) in order to achieve the best strategy. After the pairwise comparison, the relative weight of each of criteria was determined using the special value method (final value) **(Fig. 5).**

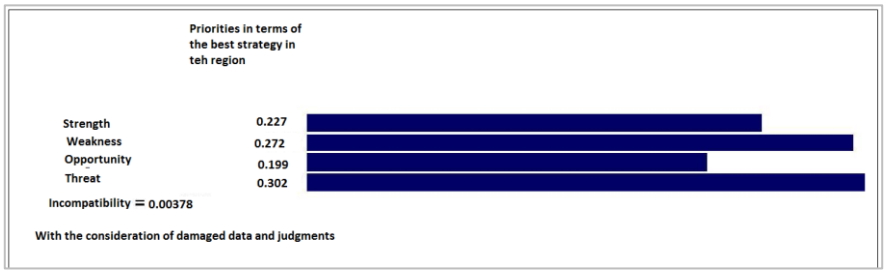

Fig. 5: Pairwise comparison of AHP-SWOT Strategies

Table 3 shows the pairwise comparisons and final weights of all factors at four levels. The table shows the extent of effectiveness of each of criteria and sub-criteria of four strategies using Expert Choice.

Table 3: Pairwise comparison in Expert Choice

Level 1	*Level 2*	*SO*	*ST*	*WO*	*WT*	*Grand Total*
opportunity (G: .199)	*o1 (G: .017)*	*0.003*	*0.004*	*0.003*	*0.007*	*0.017*
	o10 (G: .020)	*0.006*	*0.008*	*0.005*	*0.003*	*0.022*
	o11 (G: .016)	*0.005*	*0.006*	*0.005*	*0.005*	*0.021*
	o2 (G: .017)	*0.003*	*0.004*	*0.003*	*0.006*	*0.016*
	o3 (G: .016)	*0.003*	*0.004*	*0.003*	*0.006*	*0.016*
	o4 (G: .019)	*0.003*	*0.004*	*0.004*	*0.007*	*0.018*
	o5 (G: .020)	*0.003*	*0.004*	*0.004*	*0.008*	*0.019*
	o6 (G: .017)	*0.003*	*0.004*	*0.004*	*0.007*	*0.018*
	o7 (G: .020)	*0.003*	*0.004*	*0.004*	*0.008*	*0.019*
	o8 (G: .019)	*0.003*	*0.007*	*0.004*	*0.006*	*0.02*
	o9 (G: .019)	*0.003*	*0.008*	*0.004*	*0.005*	*0.02*
opportunity (G: .199) Total		*0.038*	*0.057*	*0.043*	*0.068*	*0.206*
strength	*s1 (G: .024)*	*0.004*	*0.005*	*0.005*	*0.009*	*0.023*
	s10 (G: .022)	*0.004*	*0.008*	*0.007*	*0.005*	*0.024*
	s2 (G: .022)	*0.004*	*0.005*	*0.004*	*0.008*	*0.021*
	s3 (G: .022)	*0.004*	*0.006*	*0.004*	*0.009*	*0.023*
	s4 (G: .023)	*0.004*	*0.006*	*0.005*	*0.009*	*0.024*
	s5 (G: .024)	*0.004*	*0.006*	*0.005*	*0.009*	*0.024*
	s6 (G: .021)	*0.003*	*0.005*	*0.004*	*0.008*	*0.02*
	s7 (G: .021)	*0.004*	*0.005*	*0.004*	*0.008*	*0.021*
	s8 (G: .026)	*0.007*	*0.009*	*0.004*	*0.01*	*0.03*
	s9 (G: .022)	*0.006*	*0.009*	*0.005*	*0.006*	*0.026*
strength Total		*0.044*	*0.064*	*0.047*	*0.081*	*0.236*
threats (G: .302)	*t1 (G: .031)*	*0.004*	*0.008*	*0.004*	*0.012*	*0.028*
	t2 (G: .031)	*0.005*	*0.008*	*0.006*	*0.012*	*0.031*
	t3 (G: .037)	*0.006*	*0.01*	*0.006*	*0.015*	*0.037*
	t4 (G: .037)	*0.009*	*0.007*	*0.006*	*0.014*	*0.036*
	t5 (G: .036)	*0.006*	*0.01*	*0.007*	*0.014*	*0.037*
	t6 (G: .030)	*0.005*	*0.008*	*0.005*	*0.012*	*0.03*
	t7 (G: .035)	*0.005*	*0.009*	*0.005*	*0.014*	*0.033*
	t8 (G: .035)	*0.006*	*0.013*	*0.006*	*0.011*	*0.036*
	t9 (G: .031)	*0.008*	*0.012*	*0.007*	*0.01*	*0.037*
threats (G: .302) Total		*0.054*	*0.085*	*0.052*	*0.114*	*0.305*
weaknesses (G: .272)	*w1 (G: .030)*	*0.004*	*0.005*	*0.006*	*0.012*	*0.027*
	w2 (G: .038)	*0.005*	*0.007*	*0.008*	*0.015*	*0.035*
	w3 (G: .037)	*0.005*	*0.007*	*0.008*	*0.014*	*0.034*
	w4 (G: .031)	*0.004*	*0.006*	*0.006*	*0.012*	*0.028*
	w5 (G: .032)	*0.004*	*0.005*	*0.007*	*0.012*	*0.028*
	w6 (G: .034)	*0.005*	*0.006*	*0.007*	*0.013*	*0.031*
	w7 (G: .040)	*0.005*	*0.006*	*0.009*	*0.016*	*0.036*
	w8 (G: .029)	*0.005*	*0.011*	*0.007*	*0.01*	*0.033*
weaknesses (G: .272) Total		*0.037*	*0.053*	*0.058*	*0.104*	*0.252*
Grand Total		*0.173*	*0.259*	*0.2*	*0.367*	*0.999*

Pairwise comparison was carried out among the choices (WT, WO, ST, and SO), each of weaknesses, strengths, opportunities, and threats, comparison normalization, and allocated numbers done by experts in Expert Choice. For example,

Level 2	***SO***	***ST***	***WO***	***WT***	***Grand Total***
o1 (G: .017)	***0.003***	***0.004***	***0.003***	***0.007***	***0.017***

According to the experts' opinions, the effectiveness of the first opportunity (O1) in SO, ST, WO, and WT strategies is 0.003, 0.004, 0.003, and 0.007, respectively. As a result, the total effectiveness of O1 on four strategies is 0.017. The most important finding in Table 4 indicates that W7 (with the score of 0.036), T9 (with the score of 0.038), S8 (with the score of 0.03), and O10 (with the score of 0.022) are the most effective strategies. In other words, other strategies are mainly influenced by these choices. To determine the extent of effectiveness of each of these criteria and sub-criteria and assess each of sub-criteria, rose analytical diagram was employed. This diagram facilitates the analysis of each of factors for finding the best strategy and a systematic attitude for prioritizing **(Fig. 6).**

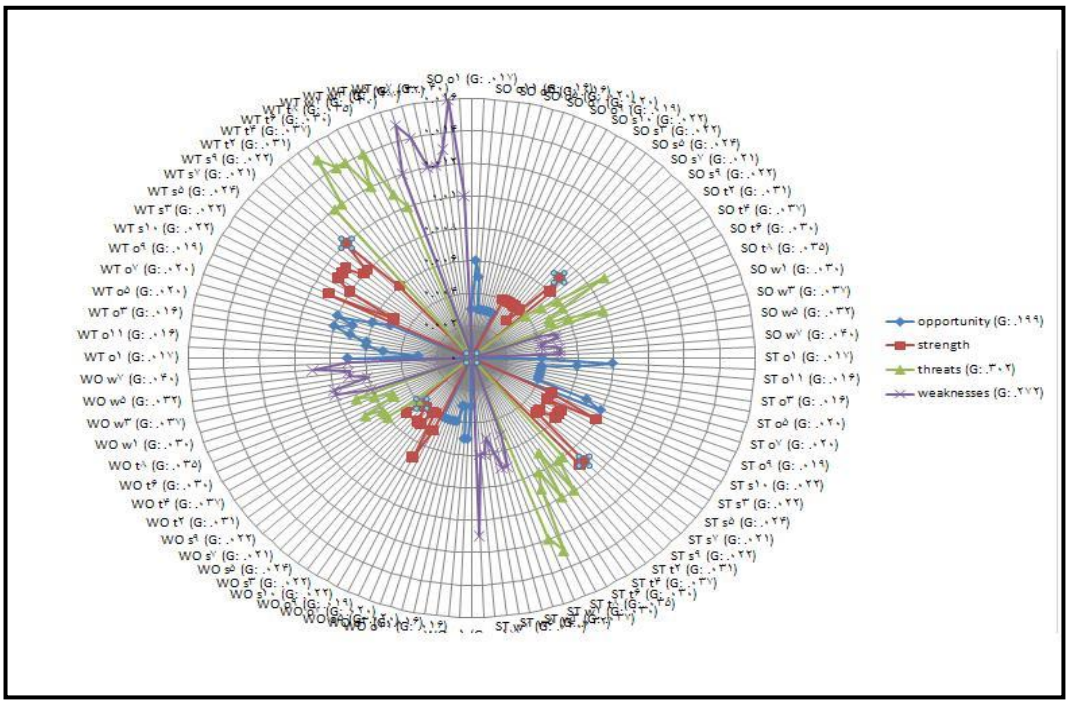

Fig. 6: The effect of criteria on four strategies

The following table shows pairwise comparison of two first levels and choices.

Table 4: Comparison of weights of criteria for selecting the best four strategies

Strategy	Opportunity	Strength	Threat	Weakness	Final Result
SO	0.038	0.044	0.054	0.037	0.173
ST	0.057	0.064	0.085	0.053	0.259
WO	0.043	0.047	0.052	0.058	0.2
WT	0.068	0.081	0.114	0.105	0.368
Final Score	0.206	0.236	0.305	0.252	1

The results of Table 4 indicate that opportunities, strengths, threats, and weaknesses (each as a unit) were effective in SO strategy by 0.038, 0.044, 0.054, and 0.037, respectively. The impressionability of these four strategies was calculated among weaknesses, strengths, opportunities, and threats. Findings of this table indicate that WT strategy (with the final score of 0.363) was mostly influenced by internal and external factors in terms of the selected livability and is the dominant approach in the livability condition of the region. Previous findings introduced different types of strategies in order to achieve the final goal of this study (the determination of capabilities of existing livability condition). The results of previous calculations were used in the process of developing strategies. These strategies led to the formation of SWOT matrix for the study area. After determining the livability strategies of the selected region, they were prioritized by calculating the final weights of each of strategies according to their importance. In this regard, Expert Choice was used. **(Fig. 7)** shows the results of the superior strategy.

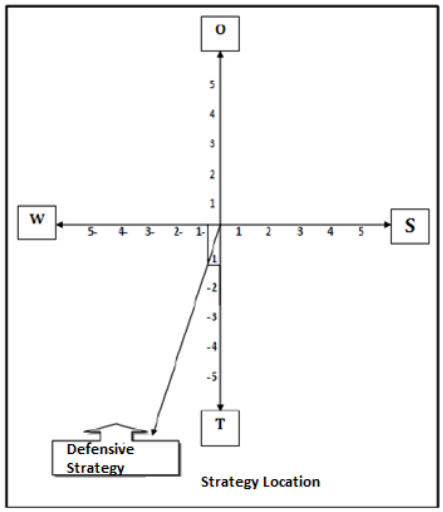

Fig. 7: Final AHP-SWOT Diagram to take the best strategy (Source: Author)

The results drawn by Expert Choice in terms of the executive prioritization and determination of regional livability strategies indicate that the volume and area of the weight-related triangle in the third quarter are more than other quarters and the strategy prioritization is towards the defensive strategy (WT) and weight vector from the origin of WT point has the greatest weight.

As it can be seen, the combination of AHP and SWOT in terms of the regional livability indicates that the greatest value goes for WT strategy with the final weight of 0.367. After determining strategies and prioritizing them, SWOT matrix is used as well as internal and external capabilities and weaknesses and threats facing the regional livability in order to combine the strategies and determine the livability-related executive approaches (Table 5).

Table 5: Matrix of strategies and solutions for promoting the livability of the study área

Analysis Topic	Strategies for promoting the livability of old areas	Analysis Topic	Strategies for promoting the livability of old areas
Diversity Strategy (S-T) (Maxi-Mini Strategy)	1.Creating incentives for restoring and modernizing old buildings by locals according to the internal potentials 2.Identifying the residents and taking measures into account in order to establish the social texture such as teaching them about their new living environment in terms of cultural-historical aspects 3.Using demographic, spatial, and economic potentials of the area in order to attract population 4.The emphasis on creating and preparing the ground for the NGOs in terms of the old area's affair 5.Offering an operational plan for organizing the status quo including the reconsideration of the existing access and redefinition of access hierarchy or land re-separation and beautification of lands	Offensive strategy (S-O) (maxi-Maxi Strategy)	1.Complete use of existing facilities and capacities especially inside the old area 2.Paying attention to the public participation in maintaining the residential value of the area with respect to the urbanization principles and criteria 3.Winning public satisfaction for purchasing homes and creating diversity, vitality, and sociability in city's all living spaces 4. Attracting the investment according o the status quo 5. Teaching cultural values to the public in order to mobilize the public to preserve the urban heritage
Defensive Strategy (W-T) (Mini-Mini Strategy)	1.The population retention through the empathy and coordination of all authorities and institutions in line with the public participation of residing in old areas (from planning to implementing) 2.Granting loans in the shortest possible time to the private sector and people 3.Attraction of public participation in terms of the project benefits 4.Cretaing greater added value for the internal development by providing security, health, and public services inside the old area	Mini-Maxi Strategy (W-O)	1.Informing public in terms of the economic values of the old area to attract investment 2. Preparing ground to reduce social conflicts and incompatibilities 3. Preparing ground to strengthen NGOs regarding their roles in economic and social vitality 4. Accumulation of abandoned homes without historical and cultural values and assigning them to residential locations with an emphasis on no-conflict 5. Qualitative and quantitative promotion of urban spaces related to the historical, cultural, and social identity of the study area and its effectiveness scope

The next step is to analyze the reality of results and calculation outputs. The sensitivity analysis is known to be a systematic method to determine the importance of criteria and sub-criteria, affecting the final evaluation and determination of livability-related superior strategy or strategies.

In this regard sensitivity analysis was used to assess the effectiveness of changes of criterion weight (superiority) in the mentioned strategies. **(Fig. 8)** shows the sensitivity of criteria.

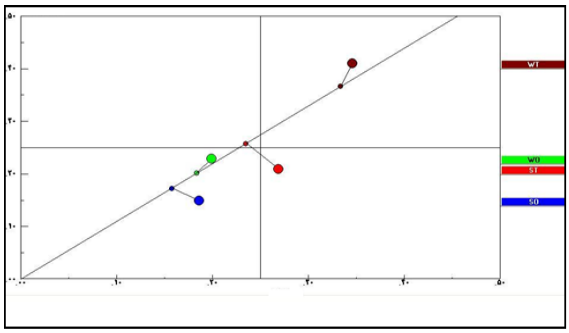

Fig. 8: 2-D Sensitivity Analysis of Four Strategies

The analysis of weight changes of four main criteria and their effects on the final results (the determination of the superior livability strategy on old area of Zabol, Iran) in Expert Choice indicates that ST strategies are the most sensitive and WO strategies have the least sensitivity in the regional livability.

Conclusion and recommendations

Urban livability has recently become a modern and dominant topic in theoretical and scientific literature of urban planning and development. This is mainly because today's urban community features have led to an unstable living environment for people (natural and artificial environment). The purpose of this study is to identify internal and external factors affecting the livability of old area of Zabol, Iran through strengths, weaknesses, opportunities, and threats in order to assess the livability capabilities. Despite potential livability capabilities, the results indicate that there is a long way away to achieve the goals. The AHP-SWOT results and WT defensive strategy in terms of livability, it is claimed that the current situation cannot be suddenly improved; however, numerous measures are required to meet the shortcomings in old area of Zabol, Iran. Therefore, the following recommendations are proposed:

1. The determination of optimal population size for old areas of Zabol according to the possibility of providing basic needs and running dynamic plans in this regard
2. Paying attention to public participation in development, approval, and implementation of regulatory strategies resulted from the 8-stage process by the strategic team and the public trust in offering strategies.
3. The retrieval of the continuity of old areas of Zabol with new areas in order to restore the prosperity
4. Paying attention to today's needs in old areas and prioritizing urban services in neighborhoods
5. The limitation of physical development and construction outside of Master Plan through legal limitations and fines for violators.
6. The delegation of authority to service provider organizations and provision of infrastructural facilities in order to block infrastructure development outside of the Master Plan
7. The consideration of urban design standards for construction in order to prevent the disturbance of neighborhoods and create a visual order in the city.
8. Finally, with the help of public participation, these recommendations can help urban authorities to meet the shortcomings of old areas of Zabol, Iran using regular urban development plans. This practice provides peaceful environment for the residents.

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