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Identifying Factors of Border Markets Influencial on Smart Urban Development In Border Areas with a Future Study Approach (Case Study: the City of Zabol)

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Abstract

The development process attempts to improve the quality of people's lives. The demand of Iran is quite evident in the process of evolving the border cities in which the nature of border interactions of the residents in such urban areas with those on the other side of the border will have specific economic, social, cultural, and security effects. Additionally, taking advantage of the border markets acts as a significant lever in developing the border cities, leading to population growth in the areas and considerable positive effects in the development of the border cities. The present study aims to identify the key factors influencing the border areas in Zabol and illustrate the smart and managed city growth with a futurist approach in the horizon of 2044. The study is practical, and its research method is descriptive-analytical. Due to the futuristic approach, it is analytical-exploratory. The required data is gathered through documentaries and survey methods. The research included a statistical population of 30 experts, specialists, and elites. Initially, the Delphi method was used to analyze 7 indices with 94 criteria. After three rounds, 81 criteria were identified. In the second step, the interactive and structural effects were analyzed using the MicMac software. The results show that 20 key factors affecting the border markets influence the future development of the cities in the border areas which offer further growth and development. However, regarding smart growth, they form a sustainable system indicating that in the future, the border markets will not change the formation of smart development in the city of Zabol; thus, the city will experience an urban development with no smart growth. The most effects will be in the variables of welfare condition and social security, the unemployment condition, the physical expansion of the city, the rate of tourist attraction, the production condition of the manufacturing units and firms, the condition of the rail communication, the rate of mutual relations and trust between tribes, the possibility of using electronic services, the condition of water crisis and drought, border security, and transportation.

Keywords: Border Markets, Smart Development, Futures Research, Zabol

1. Introduction

During recent decades, one of the most important problems in urban research has been the developmental issues such as economic, social, and ecologic studies. Nowadays, the subject of border regions has gained greater significance and the border markets have been considered as an important

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phenomenon in these urban regions so that performance of the border markets and the role of border in developing the border cities and vital performance of these two factors in a country is regarded as a key factor in development and growth of the city since it can not only lead to sustainability of the border cities but also it can provide the linking bridge for border transactions between two countries. The authorities believe that such economic activities of the border regions can play a fundamental role in the improvement of the standards of lifestyle for the urban citizens, reduction of poverty, proper distribution of income, and acceleration of further cooperation between the border regions. During recent decades, one of the most important problems in urban research has been the attention to some developmental issues such as economic, social, and ecologic studies. Nowadays, the subject of border regions has gained greater significance and the border markets have been considered as an important phenomenon in these urban regions so that performance of the border markets and the role of border in developing the border cities and vital performance of these two factors in a country is regarded as a key factor in development and growth of the city, since it can not only lead to sustainability of the border cities but also it can provide the linking bridge for border transactions between two countries. The authorities believe that such economic activities of the border regions can play a fundamental role in improvement of the standards of lifestyle for the urban citizens, reduction of poverty, proper distribution of income, and acceleration of further cooperation between the border regions (Chandoevwit, 2004).

Therefore, the process of development in border regions is a smart attempt to elevate the level of life quality for the border people. The unique structure of these border regions requires using the maximum available resources and facilities of the macro-development strategy to plan and monitor the development in these regions, and in turn, the positive consequences will affect the negative ones such as immigration and abandonment of the border regions. Also, the establishment of the border markets can be considered as a significant step to institutionalize the businesses and development Therefore, the process of development in border regions is a smart attempt to elevate the level of life quality for the border people. In fact, the unique structure of these border regions requires using maximum available resources and facilities of the macro- developmental strategy for plan and monitor the development in these regions and in turn, the positive consequences will affect the negative ones such as immigration and abandonment of the border regions. Also, establishment of the border markets can be considered as a significant step to institutionalize the businesses and development (Ahmadpour, 2017).

In addition, the presence of complicated human issues that are more difficult than natural problems and attempts to solve urban problems that lack predictions and suffer severe variation requires a new horizon in planning. In fact, due to the continuous emergence of new issues in the world along with the heavy burden of their uncertainty, the situation has evolved these complexities so significantly that the researchers used future- research and foresight to predict the future scientific and technological changes (Pour Mohammadi, et al, 2010). Thus, it is necessary to provide proper planning for future research in an era of science and technology and development of communication nets which is accompanied with numerous uncertainty and lack of innovation In addition, presence of complicated human issues which are more difficult than the natural problems and attempts to solve urban problems which lack precise and exact predictions and suffer severe variation require a new horizon in planning. In fact, due to the continuous emergence of new problems in the world along with the heavy burden of their uncertainty, the situation has evolved these complexities so significantly that the researchers used future- research and foresight to predict the future scientific and technological changes (Pour Mohammadi, et al., 2010). Thus, it is necessary to make proper planning for future research in an era of science and technology and development of communication nets which is accompanied with numerous uncertainty and lack of innovation (Khakpour, 2015). Therefore, as a systematic process, the future research approach will be able to create a future with a medium and long-term perspectives to make current decisions and joint coordinated actions (Bina and Ricci, 2015). Iran is a country which consists of numerous border towns and cities, so the nature of border interactions between the residents of these urban areas and their adjacent people has had special economic, social, cultural and security effects; therefore, it is necessary to organize these interactions in a way that guarantees the survival and preservation of the territorial integrity and the economic independence and security of the country. In fact, smart and managed growth which is one of the effective factors in organizing the development of border cities and border markets as a fledgling institution with its long- term performance and its effects and consequences on entire structures of the country has been the focus of attention in border cities and regions (Hamzepour, 2016).

In the meantime, the city of Zabol, locating in the province of Sistan and Baluchistan adjacent to the borders of two countries, Afghanistan and Pakistan, has been able to take advantage of some unique conditions. In the process of its physical expansion and regarding the fact that the villages have been annexed to the city, the development of the city has formed in a chaotic manner. In the meantime, the city of Zabol which is located in the province of Sistan and Baluchistan adjacent to the borders of two countries, Afghanistan and Pakistan, has been able to take advantages of some unique conditions. In the process of its physical expansion and regarding the fact that the villages have been annexed to the city, the development of the city has formed in a chaotic manner Therefore, by identifying the influential components of border areas in growth, especially in terms of smart growth indicators, special attention can be paid to these areas to provide arrangements required for organizing the border areas and avoiding unplanned growth. This will be in line with the realization of research goals by achieving Smart growth and checking the status of basic indicators. Communication networks and transportation systems, the main indicators in smart growth and in the border areas, are the vital means connecting the centers and regions. . Therefore, by identifying the influential components of border areas in growth, especially in terms of smart growth indicators, special attention can be paid to these areas to provide arrangements required for organizing the border areas and avoiding unplanned growth. This will be in line with the realization of research goals by achieving Smart growth and checking the status of basic indicators. Communication networks and transportation system which are also considered as the main indicators in smart growth and in the border areas are the vital means connecting the centers and regions. These are required to provide solutions for exiting the geographical isolation of the city. However, in these areas, it has had a weak performance and has caused the border cities to enjoy little opportunities to benefit from the spaces and potentials of the border areas in economic, social and cultural dimensions and experience an unmanaged development. The present study tries to suggest answers for the following question: What are the most important influencing factors of border markets to achieve smart urban growth in the city of Zabol? Using the future- research approach looking forward to the future and with the help of smart urban growth, the factors leading to the creation of a gap in planning and unmanaged urban growth have been identified and some possible solutions have been offered to strengthen the effective and influential factors. In this way, in the future, the capacity of border markets in the region will be used more usefully to improve both the living standards of the citizens and managed growth of the city, and provide suitable solutions to accelerate the planning process for implementation. These are required to provide solutions for exiting the geographical isolation of the city. Yet, in these areas, it has had a poor performance and has caused the border cities to enjoy less opportunities to benefit from the spaces and potentials of the border areas in economic, social and cultural dimensions and experience an unmanaged development. The present study tries to suggest answers for the following question: What are the most important influencing factors of border markets to achieve smart urban growth in the city of Zabol? Using the future- research approach looking forward to the future and with the help of smart urban growth, the factors leading to the creation of a gap in planning and unmanaged urban growth have been identified and some possible solutions have been offered to strengthen the effective and influential factors. In this way, in the future, the capacity of border markets in the region will be more usefully used to improve both the living standards of the citizens and managed growth of the city, and provide suitable solutions to accelerate the planning process for implementation.

2. Theoretical foundations of research Urban system

An urban system is a set of elements or sub-systems with networks of mutual relations aiming to realize a form of social life for humans. That is, a city consists of a set of human activities that are interconnected by people, goods, energy, and information in a physical framework (Parnian, 1376). These factors both drive urban systems and make them dynamic so that no city can continue to grow independently without mutual relations with other cities. It can be inferred that urban systems are open to constantly connect their surrounding environments (Shekoi, 2014).

2.1. Development

Development is a limitless flow and path is free to travel as far as it wishes granting more developmental benefits to one who passes it. Each stage follows its previous one, so no society can move to the next stage without going through the previous stages. Likewise, if a society is on its path to development, any revolution can change the path, yet the movement should be developmental in the new

direction to appear endogenous. However, since the movement of development originates from within a society, any evolutionary movement not stemming from within cannot be called development (Aliaei, 2010).

2.2. *Sustainable Development*

According to the definition of the World Commission on Environment and Development stated in the report "Our Common Future", sustainable development refers to any development that considers meeting today's needs without reducing the ability of future generations to meet their needs (Portney, 2013; Ziari et al., 2018).

Sustainable development has introduced the following criteria in the economic, social and environmental fields:

-Society: economic society, and man-made environment

-Resources: environment, renewable and non-renewable energies, and ecology

-Skill: applying modern knowledge and technologies (Bidkhori, 2014).

2.3. *Sustainable Urban Development*

Mukoko (1996) defines the sustainable development of the city as follows: in urban development, the uses must be distributed in a balanced manner at all levels, and city residents must have access to all basic needs, including housing, communication, and leisure. The city should be located in a place with clean air, clean sanitary water, soil without destruction and pollution, with protected underground water. Also, in supporting the jobs of its people, the city should compromise itself with the latest technologies and industrial changes and provide the most decent housing with specific per capita revenue and a certain amount of taxes. Accordingly, a sustainable city is not only a clean and tidy city, but a sustainable city should be able to have suitable housing, sufficient revenue, easy access to fuel and communication network, and equal voting rights for everyone and protect them at all times (Mukoko, 1996).

2.4. Border

The border is defined as the lines separating the territory of two countries. In fact, these border lines are credit and contractual lines defined to delimit a political unit on the earth (Mirlotfi et al., 2014: 96). Different approaches on the concepts of a border are analyzed in Table 1. Applying the government's sovereignty over the areas under control and its residents is one of the goals of making a border. Nowadays, as a tool for regional and global convergence, the border can act as a key factor in the stability and unity of a society. In addition, the economy of the border areas plays a crucial role in the economic development of the areas leading to sustainable revenue (Pakbaz et al., 2012). Border locations and borders can have numerous development effects like the development of urban and extra-urban services, the creation of labor markets, urban and cross-border, urban and cross-border housing markets, cross-border urban production systems, formation of cross-border urban labor and employment coalitions, and in the most developed state can lead to the formation of urban coalitions or the formation of dual or sister cities. Abadi et al., 2016).

Table 1. The concept of border from different perspectives

Cry staller's central place	In this theory, the exploitation of services and investment determine the border. And the border crossing can choose where to affiliate and receive services.
Border in the theory of the pole of growth	In this theory, the farthest point where the effects of development reach is called the border, and it is based on industrial development and industrial macro-investment.
Border in the growth center theory	In this theory, several borders are created due to the increase of growth centers, and the distance between the center and the border decreases, increasing development and reducing deprivation.

Border in the center-periphery theory	In the center-periphery theory, the border between the center and the peripheral regions is very different, and its benefits are lost. According to the distance between the border and peripheral regions, these regions are more backward. As a result, the resources tend to be central areas, and these areas have less development process.

Source: (Studies of authors, 2023)

2.5. Border Market

A border market is an enclosed area located at the zero point of the border and next to the customs authorized to carry out clearance procedures, where the people of both sides can sell the required goods and products in compliance with the export and import regulations in these markets (Asheri, 2011). Economic activities are carried out in border areas for the economic development of border cities, to get out of geographical isolation, to improve the region's infrastructure, and to stabilize the population (Gandomi, 2019). The development of the border areas caused by the markets, especially in urban areas include road construction, transportation networks, railways, improved quality of housing, increased urban infrastructure, a sense of job security in the border markets, and increased cooperation between the two regions. So, making planned border markets can lead to the development of border areas and the progress of border cities (Janparvar et al., 2021).

2.6. Urban boundary development

To prevent scattered urban growth, the boundary of urban growth acts as the controller of this growth so that for using low development densities, some places outside the border are considered, whereas, for high-density places, areas within the same border are considered for urban development. (Wong, 2006).According to Figure 1, the boundary of urban growth is in a linear map depicting the boundary between the lands with concentrated development capability and those with low development capability. The boundary of urban growth represents a more brilliant clarity of the lands that have developed with the growth management plan. Therefore, the principles of forming a boundary are:

-City growth management

-Land preservation for future settlements

-Places for founding a continuous and compact city

In this regard, while drawing the border of urban growth, it is necessary to consider that a small border of the growth areas will lead to a shortage of land, and consequently, a significant price increase. Also, the development will be directed towards its adjacent areas. On the other hand, if the border of the city growth is very large, it will not have a significant impact on preventing passive development; therefore, one of the best theories for providing a suitable and managed way with numerous successes in different countries is the theory of smart growth that leads the managed development of a city (Tayefeh Isa Khajehlou, 2014).

2.7. Smart Urban Growth

A new approach that is capable of reducing and treating the current problems of cities and sustainable urban development is smart urban growth. In 1987, the topic of sustainable development was raised related to environmental issues. There, the theorists active in urban planning used the term sustainable city and then smart urban growth (Moradi and Peivastegar, 2022). A comprehensive definition of smart growth is provided by the International City/County Management Association (ICMA1): it is a development which covers economy, society, and environment and creates a framework for the decisions made by communities on the location and quality of the growth (Hassanzadeh et al., 2021). The strategy of smart urban growth is trying to reshape cities by leading them towards an empowered community that has access to desirable environment (Pour Mohammadi and Ghorbani, 1382). Globally, especially in developed countries, the main feature of smart urban growth is low-density dispersion, which focuses on the principles of development and planning, has established the pattern of land use and effective transportation. (Kiani and Raeesi, 2018).

2.8. Smart urban growth has three main areas that are interrelated:

- Density**;**
- Land use**;**
- Ways of transportation**;**

In terms of density, reforms include limiting urban physical growth and expansion.

In terms of land use, reforms mean providing mixed and mixed uses.

In terms of ways of transportation, the reforms also include the use of different means of transportation with a greater emphasis on public transportation and the formation of comfortable and pleasant spaces for pedestrians (Dolati, 1386).

3. Future studies

Future study is the process of systematic efforts looking forward to the long-term future of science, technology, the environment, economy, and society. It aims to identify the most common emerging technologies and to strengthen strategic research areas that grant the most economic and social benefits (Administrative Studies and Research Office, 2022).

Recognizing, examining, and analyzing the changes, drawing possible futures and preferred futures, and finally planning to achieve the agreed desired future are the main steps of future research. In this context, since the desired future is always chosen according to logical and rational criteria, rationality is considered one of the main pillars of future study. (Heidari, 2013).

4. Research background

Jamali et al. (2023)in research titled Evaluation of climatic, edaphic, vegetation data and their trends around cities located in desert environments using online remote sensing to investigate air, water, soil, and plant resources that are affected by human activities. Have been exposed to risk and have been addressed. The aim is to study the changes in these resources using remote sensing data in the last 20 years. The study area is Yazd province (including 24 cities) in the desert region in the center of Iran. Data from remote sensing products were extracted with NASA's Giovanni web-based software and Google Earth Engine platform in the form of time series maps and charts.

The results showed that there are two groups of variable increase and decrease. The variables that increased plant density were soil temperature, organic carbon, black carbon, and evaporation and transpiration. The reduced variables were wind speed, carbon monoxide, dust, soil moisture, and ground surface temperature. Comparing these three categories of climatic, edaphic, and plant factors shows that plant and climatic factors have a good trend. Edaphic factors only 50% of them had a good trend. Considering climate factors, evaporation and transpiration had an unfavorable trend, but temperature and wind speed had a good trend. The policy of preserving the plant environment in the desert region was caused by increasing the vegetation density and reducing dust, wind speed, and air temperature. Good and bad trends were observed in areas with more night light in cities. This method provides a rapid review of many different sources in early warning to governments and decision-makers in the region.

Zahra Moradi and her colleagues (2022) in their article entitled " Evaluation of the economic and social effects of the construction of border markets and its role in the development of urban areas (case study: markets in the city of Handijan) economic, social, transportation, urban services and infrastructure have been investigated and by using the fuzzy ANP model and inferential square statistics, the analyzes have come to the conclusion that the economic component has the most impact from the creation of the market, and the infrastructure component has the least impact.

Mohsen Jan Proro and his colleagues (2021) in the Qualitative meta-analysis of research methods and results related to border markets in Iran have investigated the factors of tourism, economic development, socio-economic and physical-political, and security as the strengths of the research. It shows that so far, no practical perspective has been presented at the national level to strengthen the border market.

Mehdi Mubasheri (2019) in his article entitled "Evaluation of the role of economy of border areas in sustainable security" (case study: Zabul city) using T-test and SAWT model, has investigated the economic situation in border areas and creating security in Zabul city, which studies have shown Among the dimensions (economic, social and political), the role of the economy in this field is more stable, and MilAk Border Market is the most influential economic factor with a weight of 0.567 compared to Ramshar(0.433)Free Zone.

Bahman Baigani (2019), in a study titled "Constructing Social History and the Foundations of the Formation and Continuation of the Informal Economy (informal market and Trade in Baneh) has paid attention to the underlying issues of the informal economy in the border market of Baneh, which shows

that the border location of Baneh It has been a type of commercial economy throughout history, which has become informal with the emergence of governments. The reason behind this type of economy in the border city is environmental problems - limited resources and cultural affinity.

Tahereh Faraz Mand (2018) by examining the role of border bazaars in economic, social, and cultural development in the western provinces of the country (case study: Mehran border) used the Delphi model to study the role of bazaars in socio-cultural and economic development. The results of this research show that out of 24 data in the form of 7 main components (economic, social, health, educational, organizational, institutional, cultural) constitute the most important factors in the development of the western provinces of the country.

Xin Wei (2022), in a study on border effects in a city and coordinated regional development in emerging economies, examines the impact and mechanism of border effects in a city on the coordinated development of a regional economy by combining a quasi-natural experiment in reorganization of the border of China's municipal areas and satellite night light data are checked. Studies show that the border effects of municipal areas in a city are significantly vital in the coordinated development of the regional economy. In addition, restructuring the district boundaries promotes the coordinated development of districts by improving the average level of public services. This study shows that borders are essential in a city, and the border impact can be an effective means to promote coordinated regional development in emerging economies.

Eduardo Medeiros - Ricardo Ferreira (2021), in a study entitled Strengthening border areas through better cross-border transport (case study: Europe), examines the border areas of Europe as an integrated territory, the results of which show that daily interactions in There is a border for citizens, but the main obstacle in the supply of inappropriate services is transportation services, which is proposed in this article to provide policy tools for greater penetration of transportation.

Fangxuan (Sam) Li GuojieZhang (2021), in his research entitled (Border Residents' Perceptions of Sanctions and Tourism: A Case Study of North Korea), addressed the issue of sanctions in border areas, which are increasingly used as a diplomatic practice among actors used internationally. Although embargoes have provided valuable insights into the global tourism system, the relevant understanding requires further research. This study examines border residents' perceptions of sanctions and tourism in the case of North Korea. It includes an analysis of in-depth interviews with residents of Dandong - the largest border city between China and North Korea. The findings show that the economic development and tourism of North Korea and Dandong have been hampered by the sanctions. In addition to the negative effects caused by sanctions, this study also reveals related positive effects.Furthermore, the study shows that residents interpret and assess sanctions from both short-term and long-term perspectives. This research contributes to the growing interdisciplinary field of tourism and sanctions by examining and emphasizing the effects of sanctions on the residents and tourism of border towns.

Ksenia Poplavskaya, Gerhard Totschnig, Fabian Leimgruber a, Gerard Doorman Gilles Etienne Laurens de Vries) (2020), in a study titled The Integration of the Day Market and Retransmission to Increase Cross-border Exchange in the European Electricity Market, focused on regional market design. The research on the integration of the day market and the regional (border) market suggests that the results of these studies show that the capacity of cross-border exchanges will increase significantly and lead to cost reduction, which will improve the integration of Europe and as a result of achieving public welfare.

Gathering information from the previous studies on border markets reveals that a few studies done on smart growth in border areas have just analyzed other aspects of growth and development. Najafi (2018) conducted an analysis of factors influencing the development of border cities in an article titled "Analysis of factors affecting the development of border cities with a future research approach (case study of the city of Zabol)". The study employs a future research approach to examine how these factors interrelate and their impact on the future of Zabol. In terms of analyzing the border, it is in line with the future research approach of the present study in which the researcher has identified 25 factors that ultimately lead to system instability. The results of the research indicate that the variables of tourism capacity, immigration, high environmental and natural and agricultural capacity, central role of the city in Sistan district, advantages of the transit road in the east of the country, inefficient treatment of executive and political managers, weakness of the railway connection with the neighboring population centers, potential of emergence and escalation of social abnormalities, easy access to international drug trade are the most effective factors with impact the state of urban development in future. According to the results obtained by the researcher, it seems that the research gap is inattention to smart growth, so smart growth and effective components in border areas and border markets are investigated and identified as the existing capacity of the regions.

5. Materials and methods

The research methodology is descriptive-analytical and is based on library and documentary studies, as well as field surveys and surveys in Zabol. The planning horizon, set for 1423, is based on the future-research approach. Qualitative data was collected through surveys using questionnaires and the Delphi technique. In addition, document studies were used to establish theoretical foundations. The population included 30 experts, selected using the snowball sampling method. The questionnaires prepared by the researcher contained seven indicators and 94 criteria to rate the variables in 5 ranges within the Likert spectrum. After obtaining 81 criteria to examine the cross effects, the rates were given from 0 to 3 under the supervision of experts: “0” for equal impact, “1” for high impact, "2" for very high impact, and "3" for the highest impact. The rates were entered into the cross matrix of Micmac software to measure the effectiveness of each factor. Accordingly, the researchers identified the research variables. Research techniques and software included Excel, Delphi method, and MicMac. Figure 2 illustrates the research process.

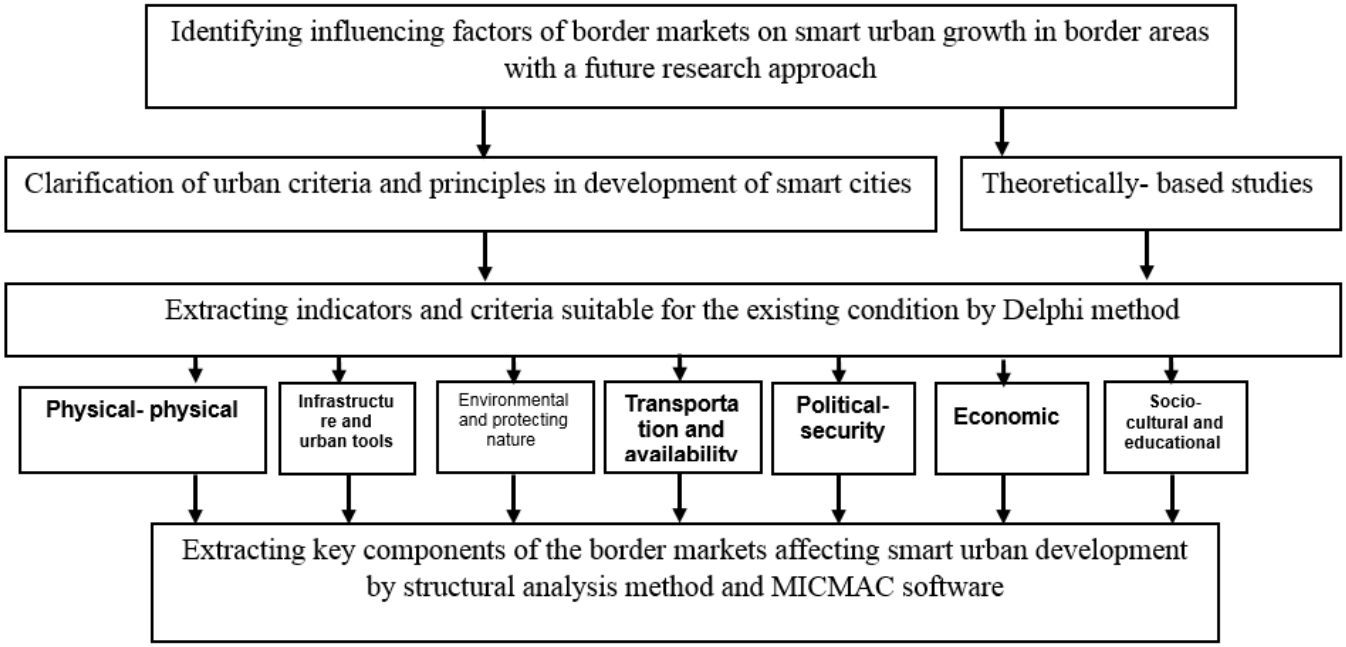

Table 2. The concept of border from different perspectives (Source: Authors, 2024)

6. Introduction of the study area

Sistan and Baluchistan province with a long common border with Afghanistan and Pakistan (2021 km: 1100 km land border and 300 km water border) is located in the southeast of Iran and is one of the vastest provinces of the country. Zabol, as one of the cities of the province, has an area of 2084 hectares (8117 km^2), which covers 0.13 of the size of the city**.**

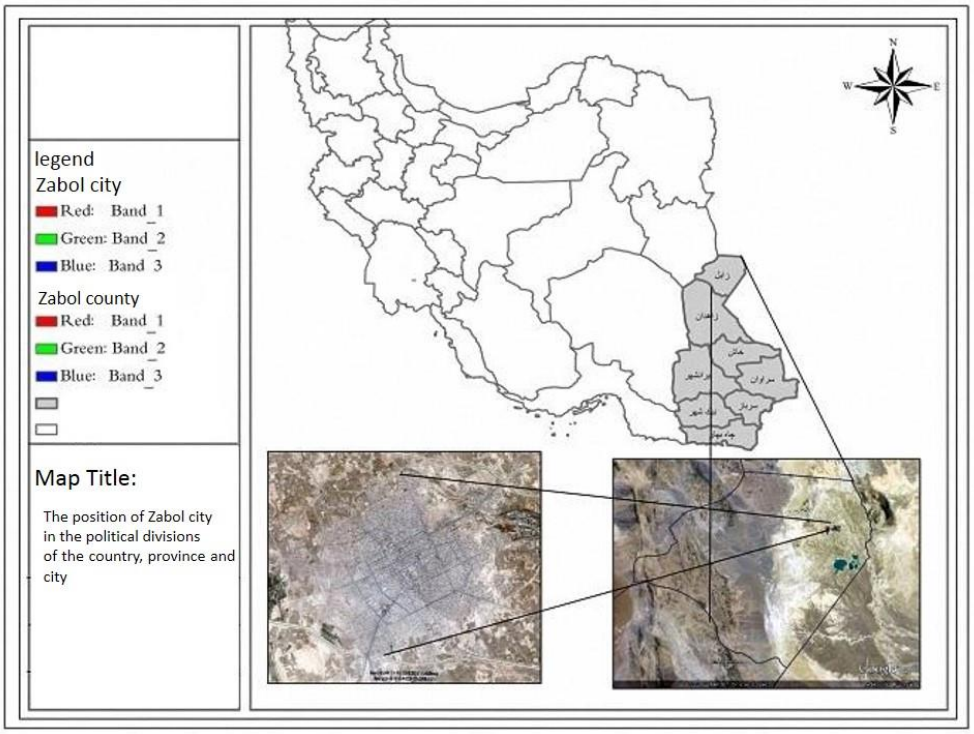

Fig.1. The location of Zabol in the province and the country
(Source: Authors, 2024)

From the north and northeast, Zabol borders South Khorasan province and Afghanistan. To the south, it is adjacent to the cities of Zahk and Zahedan, and to the west, it borders Dasht Lut. To the east, the newly established City of Hirmand is its neighbor. This city has a 216 km long asphalt road to Zahedan, the capital of the province, and it is 1078 km away from Tehran. The city's population based on the 2016 census, is 165,666 people (Statistical Yearbook of Sistan and Baluchistan Province 2016). In the past, the City of Zabol, which included the entire Sistan region, was its only city. With the new political divisions and the separation of Shahrekini-Narouii and Miankangi areas and their transformation into Zahk and Hirmand counties, this city covers a central part, Shib-e- ab, Posht-e-ab, and 5 urban areas including Zabol, Adimi, Bonjar, Mohammadabad, and Hamon. Although these are currently considered the new cities of the Sistan region, they still have a strong dependence on Zabol as the first city of the region. This city and especially its centers is the largest and most populated city after Zahedan (Tash Consulting Engineers, 1385, 25). According to the adjacency of Sistan and Baluchistan province with its neighboring countries and the studies done in the area and based on the approval of the government, Sistan and Baluchistan province has 13 border markets which have the highest number of active markets among the border provinces of the country. Of 13 approved markets, 6 are on the common border with Afghanistan and 7 are on the common border with Pakistan, however, only 7 markets are active: 5 on the common border with Pakistan, including Mirjaveh, Pishin, Kohak, Jalq. And Rimdan, and 2 on the common border with Afghanistan: Milak and Gamshad (Fig. 2).

Fig.2. Geographical position of border markets in Sistan and Baluchistan province
(Source: Authors, 2024)

7. Research findings

7.1. Identifying the effective factors of border markets in smart urban development

The researchers used the Delphi method to identify the primary factors of border markets that impact the City's future development and border areas in terms of smart urban developments. The researchers analyzed experts' opinions and developed a researcher-made questionnaire based on the literature. This questionnaire was monitored throughout 3 testing periods using the Delphi technique, resulting in the identification and selection of 81 criteria as the primary factors for their research.

Table 3. Classification of the components of border markets that are effective in smart urban growth (Source: Authors, 2024)

Indicator	Variable	Indicator	Variable
Social, cultural and educational	Tribes' relations and trust	political, security	necessary fortifications and defense facilities
	Welfare and social security situation		Facilitating border security by the government
	situation of immigration		situation of water crisis and drought
	Maintaining and improving lifestyle	transportation and access	quality of roads
	situation of street conflicting in the city		quality of public transportation
	Prevalence of drugs among the young		passenger terminal
	amount of participation of local people in the management of the market		transport revenue
	More activity in social media		domestic and foreign passenger flights
	situation of non-native people in the border areas		International Air Refueling Center
	Development of educational and academic centers in the border areas		turning the airport into an air terminal for export and import of goods
	Reducing poverty		access to public transportation
	Population growth		Rail relationship
	Literacy level status		quality of the distribution of transport stations
Economic of women	investment in the private	environmental sector and protection of natural resources	fine dust
	Females' Employment		hot and unsuitable weather
	amount of revenue from the activity of the free zone		state of waste production
	status of productive and		presence of green

	permanent jobs		space
	state of unemployment		health and cleansing in the city
	amount of land price increase		amount of noise pollution in the living environment
	amount of job creation facilities		state of sewage disposal
	price of goods		performance of the municipality in improving the quality of the urban space
	Employing native people		Occurance of flood and blocked water passages
	purchasing power status of people,		status of surface water collection
	Construction of the hotel	Infrastructure and urban equipment	pollution caused by industrial workshops
	Building restaurants		state of the city's public scary spaces caused by increased rate of construction
	tourist Attraction		investment in infrastructure
	Establishment of exchange companies		availability of drinking water
	Improving the supply of goods		extent of modern information and communication technology
	Expansion of cross-border exchanges of people,		access to parking lots
	possibility and entrepreneurial opportunity		access to gas
	Knowledge of business practices		access to electricity
	status of benefiting from local products,		improving the quality of communication roads' quality
	Production units and the creation of firms		status of mobile antennas and access to the Internet in border areas
	state of production of production units	Physical- structural	physical expansion of cities
	Use of electronic services		physical land changes
Political-security	people's political participation		entertainment space
	Defense of sovereignty in the internal and external dimensions		investment in housing

	Preventing the emergence of ethnic and tribal gaps	higher quality of housing hygiene than before the foundations of markets
	Illegal commuting	higher quality and stronger houses
	Border securities	residential area
		Preference of settlement in the area

The identified and determined criteria were placed in MicMac software. The number of identified criteria is 81. The dimension of the matrix is 81*81. The results can be seen in Table 3.

Table 4. Data analysis of interaction effects matrix in MICMAC software (Source: Authors, 2024)

Fillrate percentage	**Total**	**Number of threes**	**Number of twos**	**Number of ones**	**Number of zero's**	**Number of iterations**	**Matrix size**	**Indicator**
96.20465	6312	1194	3023	2095	249	2	81	**Value**

Based on the results, the degree of filling of the matrix, 96.20%, indicates the high impact of criteria on each other, and out of the total of 6312 evaluable relationships, 249 are 0 (the indicators have no effect on each other). 2095 are 1 (indicators have little impact on each other), 3023 are 2 (relatively strong impact of indicators on each other), and 1194 are 3 (very significant relationships are key indicators that have great).

Analysis of stability and instability of the system based on the direct influential and influenced impact plan The distribution of key factors identified shows the overall features of the system. Based on the distribution of key factors in the plan (Fig. 3), it is determined whether the system is stable or unstable. Unstable systems with influential and influenced variables will cause drastic changes in the future. Also, their current situation will not remain stable. In this case, the distribution of the key factors will be rhombus-shaped and from the southwest to the northeast of the diagram

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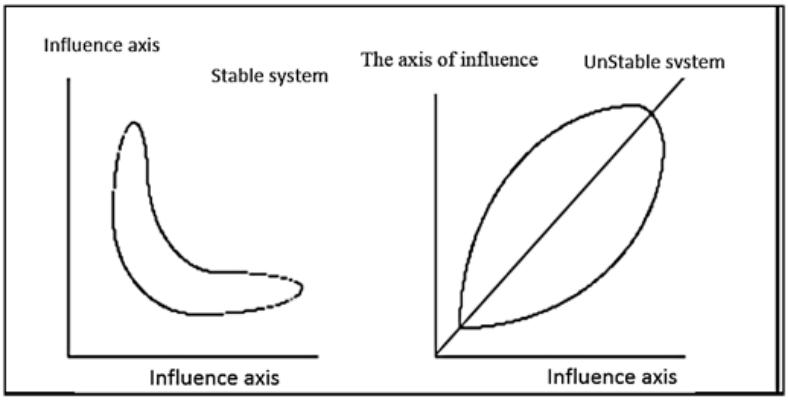

Fig. 3. Model of stable and unstable systems(Source: Naeemi et al Quoted by Godet et al, 2003: 22)

But if the system has a large number of influential factors and, on the opposite side, a large number of influenced factors, and the distribution of variables appears in an L shape from the left side of the diagram, the system will be stable, and its current conditions will not experience significant changes in the future**.** According to the output results of MICMAC, the situation of the components of border markets on

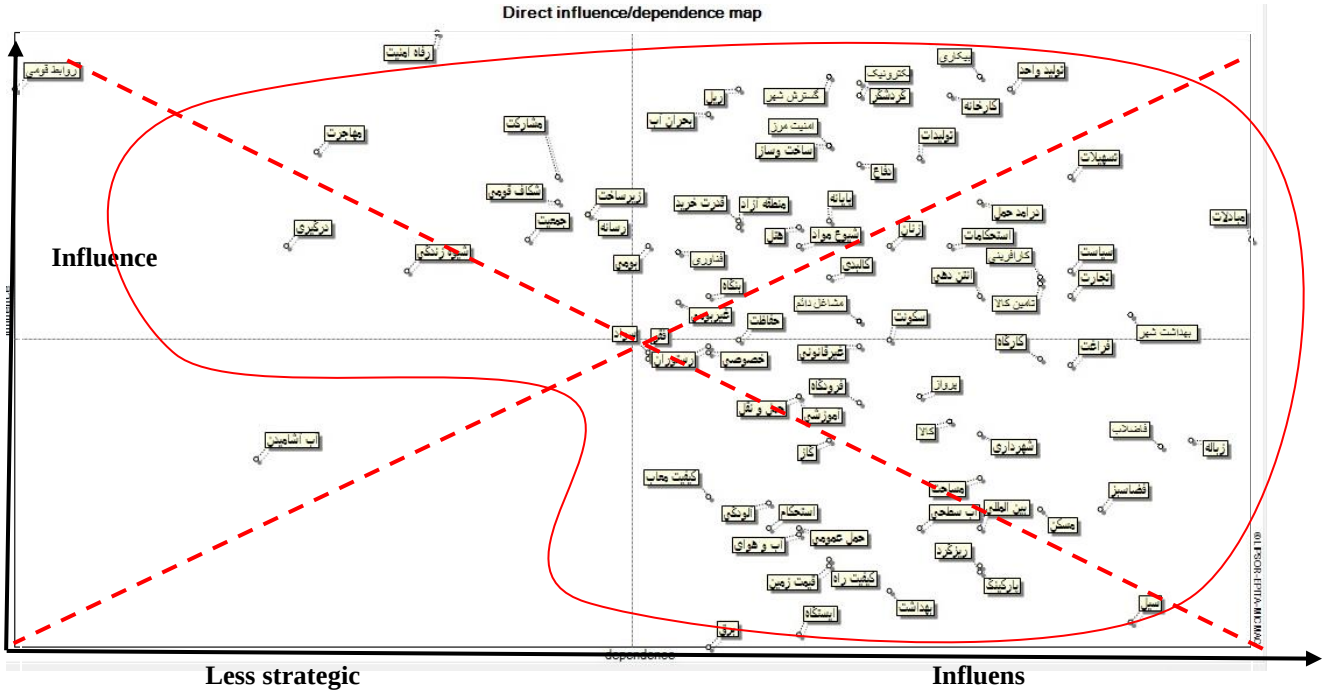

Fig. 4. The status of effectiveness criteria of border markets on smart growth in Zabol

smart urban growth in all the mentioned dimensions (such as social, economic, and political), which include the criteria in L shape, is sustainable, and the current condition overwhelming the urban system will not change and will continue with the existing conditions.

7.2. Influence graph analysis in MICMAC software

The software influence graph shows the relationships of key factors and how they affect each other. In this graph, the arrowhead shows the impact direction of key factors. The red lines show the strong impact of the factors on each other, and the blue lines, with differences in thickness, show moderate to weak relationships. The results indicate that the key components of "welfare and social security," "unemployment," "physical expansion of cities," and "tourist attraction" are the primary drivers of the strongest impacts and have increased their influence in the system. On the other hand, factors such as "expansion of cross-border exchanges," "garbage production situation," "sewage disposal situation," "sanitary city surface," "occurrence of floods and waterlogging," and "presence of green space" are significantly influenced by other key factors.

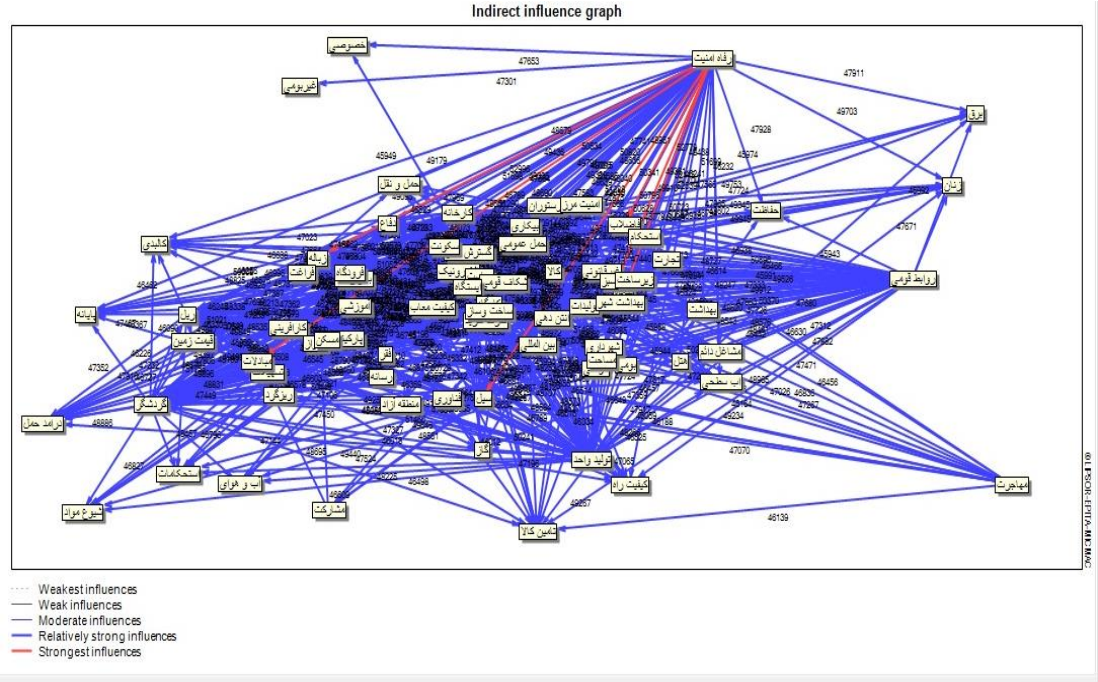

Fig. 5. Direct impacts between key components in relation to border markets and smart urban growth (Source: Authors, 2023)

Table. 5. Weighted average and ranking of the influencial and influenced degrees of the components of border markets on smart urban growth (Source: Authors, 2024)

Rank	Indicator	Influential	Indicator	Influenced	Indicator	Influential	Indicator	influenced
1	security welfare	162	exchanges	135	security welfare	162	exchanges	135
2	unemployment	156	garbage	133	Physical urban expansion	156	garbage	133
3	Physical urban expansion	156	sewage	133	tourist	156	sewage	133
4	tourist	156	Urban health	132	unit production	155	Urban health	132
5	Ethnic relations	155	fllod	132	unemployment	155	flood	132
6	Unit production	155	Green space	131	Ethnic relations	155	Green space	131
7	rail	155	Facilities	130	firm	154	Facilities	130
8	Firm	154	Business	130	Rail	153	etertaintment	130
9	Electronics	154	Politics	130	Water crisis	152	Business	130
10	Water crisis	151	Entertainment	130	Electronics	152	Politics	130
11	Border security	147	goods Supply	129	construction	147	housing	129
12	Construction	147	Entrepreneurship	129	border security	146	Goods supply	129
13	Immigration	146	workshop	129	immigration	145	workshop	129
14	Products	145	housing	129	Products	145	Entrepreneursh	129

Rank	Indicator	Influential	Indicator	Influenced	Indicator	Influential	Indicator	influenced
							ip	
15	Defence	145	Unit production	128	Defence	145	Unit production	128
16	participation	143	Unemployment	127	participation	142	Unemployment	128
17	Facilities	143	Transport revenue	127	Transport revenue	140	signal strength	128
18	Ethnic gap	139	International	127	Facilities	140	Transport revenue	128
19	Transportation revenue	139	finedust	127	Media	138	Parking lot	128
20	Media	138	municipality	127	free zone	137	finedust	127
21	Infrastructure	138	parking lot	127	purchasing power	137	municipality	127
22	Purchasing power	137	signal strength	127	Infrastructure	136	area	127
23	Terminal	137	area	127	ethnic gap	136	international	127
24	Free zone	136	Goods	127	Terminal	135	firm	127
25	hotel	136	firm	127	females	135	goods	126
26	population	134	fortifications	127	hotel	135	fortifications	126
27	Transfers	134	Products	126	population	135	flight	126
28	Conflicts	133	flight	126	Transfers	135	surface water	126
29	Drug pervalance	133	surface water	126	Conflicts	134	Products	125
30	females	133	females	125	native	134	settlement	125
31	native	133	health	125	Drug pervalance	134	health	125
32	fortifications	133	settlement	125	fortifications	134	females	125
33	technology	133	Permanent jobs	124	technology	133	Tourist	124
34	life style	130	Turist	124	life style	132	Defence	124
35	politics	130	Electronics	124	agency	130	illegal	124
36	Entrepreneurship	129	Defence	124	Entrepreneurship	130	airport	124
37	Physical	129	illegal	124	politics	129	Permanent jobs	124
38	Goods supply	128	airport	124	signal strength	128	electronics	124
39	agency	127	Land price	123	Business	128	gas	124
40	business	127	border security	123	Goods supply	128	physical	124
41	signal strength	127	terminal	123	non native	125	terminal	123
42	Non native	126	Construction	123	Physical	125	urban expansion	123
43	Urban health	124	gas	123	Urban health	124	road quality	123
44	Permanent jobs	123	road quality	123	restaurant	123	Land price	123
45	security	121	Urban expansion	123	Permanent jobs	123	Construction	123
46	settlement	121	Physical	123	settlement	120	border security	123
47	restaurant	120	Drug pervalance	122	private	120	transportation	122
48	illegal	120	educational	122	literacy	120	educational	122
49	literacy	119	hotel	122	security	119	hotel	122
50	private	119	transportation	122	poverty	119	public transportation	122
51	poverty	118	public transportation	122	illegal	118	station	122
52	workshop	118	station	122	flight	118	weather	122
53	entertainment	117	weather	122	workshop	117	Drug pervalance	122
54	educational	113	pollution	121	entertainment	116	pollution	122
55	transportation	113	fortification	121	transportation	113	fortification	122
56	flight	113	free zone	121	educational	113	free zone	120
57	airport	112	purchasing power	121	airport	113	rail	120
58	goods	110	security	121	goods	110	electricity	120
59	municipality	108	rail	121	municipality	110	security	120
60	waste	107	private	120	waste	106	Purchase power	120
61	gas	107	restaurant	120	gas	105	restaurant	120
62	sewage	106	agency	120	sewage	105	private	120
63	drinking water	104	water crisis	120	drinking water	104	agency	120
64	area	102	pathway quality	120	area	103	pathway quality	120
65	pathway quality	99	electricity	120	pathway quality	99	water crisis	120
66	pollution	98	non native	119	green space	99	non native	119
67	green space	98	technology	119	pollution	99	technology	119

Rank	Indicator	Influential	Indicator	Influenced	Indicator	Influential	Indicator	influenced
68	housing	98	poverty	118	housing	98	literacy	118
69	international	95	literacy	118	public transportation	96	poverty	118
70	public transportation	95	native	118	surface water	96	native	118
71	surface water	95	media	116	fortification	95	media	116
72	fortification	95	Infrastructure	116	international	95	Infrastructure	116
73	weather	94	participation	116	weather	95	ethnic gap	116
74	road quality	91	ethnic gap	116	Land price	93	participation	116
75	Land price	90	population	115	Finedust	90	population	115
76	parking lot	90	security welfare	112	parking lot	89	security welfare	112
77	finedust	89	life style	111	road quality	89	life style	111
78	health	87	immigration	109	health	87	immigration	109
79	flood	82	Conflict	108	flood	82	Conflict	108
80	Station	81	drinking water	107	Station	81	drinking water	107
81	electricity	79	ethnic relations	100	electricity	78	ethnic relations	100

Table 4 examines the degree of direct and indirect impacts of effective key components of smart urban growth on the growth and development of border markets and specifies their weighted average and percentage of influence and priority. Ranking and weighing of these factors are consistent with those in direct and indirect impacts with some replacement. According to Table 5, the results show that the factor "welfare and social security" with a weighted average (of 162) has the most impact, and the next priorities are unemployment (156), physical expansion of cities (156), and tourist attraction status. (156).

As Table 6 indicates, among 81 identified key indicators, 20 factors are more influential regarding the indicators of border markets on smart urban growth.

Table 6. Directly and indirectly identified key indicator- (Source: Authors, 2024**)**

Row	Indicator	Row	Indicator
1	The state of welfare and social security	11	The state of public scary spaces in the city with the increase of constructions
2	unemployment status	12	immigration status
3	The physical expansion of the city.	13	The state of benefiting from local products
4	The amount of tourist attraction.	14	Defense of sovereignty in the internal and external dimension
5	ction status of production units and factories 15	15	The amount of employment creation facilities
6	Rail connection	16	Participation of local people in Bazarche administration
7	Relations and trust of relatives	17	Transportation revenue
8	Creating production units and creating factories	18	Preventing ethnic and tribal divisions
9	The state of water crisis and drought	19	More activity in social media
10	border security	20	use of electronic services

Conclusion

Although the cities in border areas own a special geographical position, they are mostly far from the capital and active poles and are considered among the deprived areas classified with low levels of development stratification; however, since they are located on the international borders, the geographical beliefs have been expanded in the global thought system introducing borders as special sites which can be regarded as an opportunity for numerous political and economic systems of a country. Given their special significance, it is essential to focus on cities in these areas when developing plans and programs. This involves identifying strengths, weaknesses, opportunities, and threats (SWOT analysis) to promote growth and development. Additionally, leveraging border markets, which play a key role in the development of border cities, can contribute to the overall growth of these regions. Besides, it offers positive and

significant effects on the development of border cities, so that in terms of development, both small towns and large cities in border areas can be the center of cultural innovations, social developments, and political changes. Because of income from export, trade, and storage of goods, they have economic importance, the expansion of border markets as a key and strategic factor can have a powerful and effective potential for development and growth in border areas. So, it is required to apply several powerful tools to provide proper planning. Among these is a future research approach as a new tool to plan appropriate to the region in this area which will lead to sustainable development. One of the most important features that differentiates this research from other scientific research is taking advantage of the perspective and theory of smart urban growth causing better management of development planning for the city. Considering the capabilities and potentials of the border areas, especially the presence of border markets as the most important economic and political levers, smart development is introduced as a way for better development of cities along with the formulation of special plans and programs for these cities to achieve the development goals. Yet, due to numerous reasons such as weakness in urban management and unplanned physical expansion of the city plan, this process will not progress properly. In this regard, this research, with a futurist approach, uses the theory of smart urban development to analyze the factors affecting the development and growth of the effective components in creating markets in border cities and explains how these components affect the smart urban growth on the future state of Zabol.

In this research, to identify the key variables and factors affecting the components of smart growth, the opinions of experts were first taken by the Delfi method. Then the cross-influence approach was used to identify the driving forces among the key factors.81 identified key factors were arranged in an 81 x 81 matrix in MICMAC software. The degree of relationship is measured with numbers ranging from 0 to 3. Considering that the number of repetitions is two times, the results showed that the degree of filling of the matrix is % 96.20 indicating the great influence of the criteria on each other. Of a total of 6312 evaluated relationships, 249 were 0 (indicating no effect on each other), 2095 were 1 (indicators had little influence on each other), 3023 were 2 (indicates had a relatively strong influence on each other), and 1194 were 3 (high relationships are key indicators that enjoy great influence and effectiveness). According to the output results of MICMAC, the situation of the components of border markets on smart urban growth in all the dimensions (including social, economic, and political) is stable, so the current conditions governing the urban system will not change in the future and will continue with the existing conditions.

The development of Zabol has been negatively impacted by a lack of proper infrastructure and environmental resources, such as unstable settlements, security issues, limited physical development, transportation challenges, and economic instability. The region's welfare and social security situation, unemployment rate, physical expansion of the city, and tourist attractions have had the greatest impact on the city's situation. Improvement in these areas could slightly enhance the city's situation. On the other hand, factors such as the expansion of cross-border exchanges, garbage production, wastewater disposal, city surface sanitation, occurrence of floods and waterlogging, and the availability of green spaces have been strongly influenced by other key components. These factors require further attention to improve the future development of urban growth.Due to climatic fluctuation and adverse weather conditions governing the region, it seems urgent to implement activities on growth and development measures. Sustainable urban development requires sustainable urban production and income, so the current border markets in this area can improve conditions and development progress. Therefore, according to the main objective of this study, that is Analysis of Components of Border Markets and Development Measures in the City of Zabol, the key points effective in the development of smart growth were identified in terms of the components of border markets to strengthen the key factors affecting the development of this city both in the region and in the province. Another possible solution is to strengthen mutual relations with the adjacent countries through the elimination of rail shortages and the development of the communication network. In fact, by paying attention and giving importance to the development of the border cities, the region's development will be achievable. Therefore, considering the present and future conditions of Zabol, the existence of border markets should be appropriate to the strategic goals, functions, and structures of the city. Since the city has experienced numerous challenges and problems in its growth and development process, the study suggests creating a long-term perspective for building physical, economic, and political growth and development and increasing tourism capacities, which will also offer high environmental and natural capacities to reduce unemployment, expand the central role of the city in the Sistan region, increase infrastructure facilities, enjoy benefits of the eastern transit route across the country, serious behavior with inefficient executives, eliminate lack and weakness of rail communication and other transportation options, made significant changes in the state of the city's future development and overcome such deficiencies. Another possible recommendation for managers and planners is to improve the conditions by choosing appropriate approaches and new tools of planning and future research to

achieve smart and managed growth of the city and to examine the criteria of smart urban growth with a view to the future to achieve more properly managed and sustainable development and growth.

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