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

Abstract

The process of developmemt is a smart attempt to improve the quality of peoples' lives, it needs to be acknowledge that 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. Also, taking advantage of the border markets acts as a significant lever in developmg the border cities which will lead to population groth in the areas ans causes significant positive effects in the development of the border cities. The purpose of the present study is to identify the key factors influencing the border areas in the city of zabol and illustrate the smart and managed growth of the city with a futurist approach in the horizon of ۲۰٤٤. Basecd on the purpose, the study is practical and its research method is desripotive- analytical, and in terms of nature, due to the furtutistic approach, it is analytical- exploratory. The required data is gathered through documentary and surveymethods. The statistical population of the research includes ۳۰ experts, specialists, and elites. At first, the Delphi method was used to analyze ۷ indices with ۹٤ criteria. Finally, at the end third round, ۸۱ criteria were identified. In the second step, the interactional/structural effects were analyzed by MicMac software. The results of the study show that ۲۰ key factors affecting the border markets influence the futuredevelopment of the cities in the border areas which offer further growth and development, but regarding smart growth, they form a sustainable system indicating the fact that in 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 greatest effects will be in the variables of welfare condition and socal 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 betweeb tribes, possibility of using electronic services, the condition of water crisis and drought, border security, and transportation.

Key words: Border Markets, Smart Development, Futures Research, Zabol

Introduction

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, ۲۰۰٤:۱٤٥).

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: ۲۰۱۷:۱٤).

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, ۲۰۱۰:۳۷). 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, ۲۰۱٥:٤). 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, ۲۰۱٥). 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, ۲۰۱٦: ۲).

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 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. 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.

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, ۱۳۷٦:۲۰-۲۱). 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, ۲۰۱٤).

Development

Development is a limitless flow and path is free to travel as far as it wishes granting more developmemntal benefits to one who passes it. In this process, 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, ۲۰۱۰: ۸۵).

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, ۲۰۱۳; Ziari et al., ۲۰۱۸).

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, ۲۰۱٤: ٤٦).

Sustainable Urban Development

Mukoko (۱۹۹٦) 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 a pecific per capita revenue along with 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 , ۱۹۹٦).

Border

The border is defined as the lines separating the territory of two countries. In fact, these border lines are credit and contractual lines which are defined to delimit a political unit on the earth (Mirlotfi et al., ۲۰۱٤: ۹٦). Different approaches on the concepts of a border are analyzed in Table ۱. 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 is able to act as a key factor in stability and unity of a society. Also, the economy of the border areas plays a basic role in economic development of the areas with leads to their sustainable revenue (Pakbaz et al., ۲۰۱۲: ٤۹۷). Border locations and borders can have numerous development effects such as development of urban and extra-urban services, creation of labor markets. urban and cross-

border, urban and cross-border housing market, cross-border urban production system, 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., ٥:٢٠١٦).

Table ١: The concept of border from different perspectives

Crystaller's central place	In this theory, it is the exploitation of services and investment that determine the border. And the border crossing has the ability to 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, and according to the distance between the border regions and the peripheral regions, these regions are more backward and as a result, the resources tend to the central areas, and these areas have less development process.

Source: (Studies of authors, ٢٠٢٣)

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, ٢٠١١:١١-١٢). In fact, economic activities are carried out in border areas for the economic development of border cities, to get out of geographical isolation, to improve the infrastructure of the region, and to stabilize the population (Gandomi, ٢٠١٩:١٤١).the developmemts of the border areas caused by the markets, especially in urban areas include road construction, transportation network, railway, 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., ٢٠٢١: ١٨٢).

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, wheras for high density places, , places within the same border are considered for urban development. (Wong, ٢٠٠٦).

According to Figure ١, the boundary of urban growth is in a linear map which depicts the boundary between the lands with concentrated development capability and those with low development capability. Actually, the boundary of urban growth represents a more brilliant clarity of the lands which have developed in a period of time 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 cregard, while drawing the border of urban growth, it is necessary to conider that small border of the growth areas will lead to a shortage of land, and consequently, a significant increase in price. 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 to prevent 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 growth of a city (Tayefeh Isa Khajehlou, ٢٠١٤:٥٤).

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 ١٩٨٧, the topic of sustainable development was raised in relation to environmental issues. There, the theorists active in urban planning used the term sustainable city and then smart urban growth (Moradi and Peivastegar, ٢٠٢٢: ٥). A comprehensive definition of smart growth is provided by the International City/County Management Association (ICMA١): 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., ٢٠٢١:١٥٠). 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, ١٣٨٢: ٩٢). Globlly, especially in developed countries, the main feature of smart urban growth is low-density dispersion, which focusing on the principles of development and planning, has established the pattern of land use and effective transportation (Kiani and Raeesi, ٢٠١٨:٢).

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 geater emphasis on public transportation and formation of comfortable and pleasant spaces for pedestrians (Dolati, ١٣٨٦:١٤).

Futures study

Futures study is the process of systematic efforts looking forward to long-term future of science, technology, environment, economy and society, and its aim is to identify common emerging technologies and to strengthen strategic research areas which grant the most economic and social benefits (Administrative Studies and Research Office) ٢٠٢٢:١٦). In fact, Futures study studies and analyzes possible futures by applying scientific methods.

Recognizing, examining, and analyzing the changes, drawing possible futures and preferred future and finally planning in order to achieve the agreed desired future are the main steps of future research. In this context, since the desired future is always chosen in accordance with logical and rational criteria, rationality is considered one of the main pillars of futures study (Heidari, ٢٠١٣: ٤).

Research background:

Jamali et al. (٢٠٢٣)in a 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 of these resources using remote sensing data in the last ٢٠ years. The study area is Yazd province (including ٢٤ 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 in this research showed that there are two groups of variable increase and decrease. The variables that increased plant density were soil temperature, soil 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 ٥٠٪ of them had a good trend. In climatic 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 density of vegetation 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 rapid review of many different sources in early warning to governments and decision makers in the region.

Zahra Moradi and her colleagues (٢٠٢٢) 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 (٢٠٢١) 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 (٢٠١٩) 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 ٠,٥٦٧ compared to Ramshar(٠,٤٣٣)Free Zone.

Bahman Baigani (٢٠١٩) in a research entitled "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 (٢٠١٨) 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 ٢٤ data in the form of ٧ 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 (۲۰۲۲) in a research on border effects in a city and coordinated regional development in emerging economies. This article examines the effect and mechanism of border effects in a city on the coordinated development of a regional economy by combining a quasi-natural experiment in reorganization 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 important in the coordinated development of the regional economy. In addition, the restructuring of district boundaries promotes the coordinated development of districts by improving the average level of public services. This study shows that borders are important in a city and the border effect can be an effective tool to promote coordinated regional development in emerging economies.

Eduardo Medeiros - Ricardo Ferreira (۲۰۲۱) in a research 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 (۲۰۲۱) 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 important insights into the global tourism system, the relevant understanding requires further research efforts. This study examines border residents' perceptions of sanctions and tourism in the case of North Korea. It includes 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, it shows that sanctions tend to be interpreted and evaluated by residents from both short-term and long-term perspectives. This study advances the emerging interdisciplinary field of tourism and sanctions by unpacking and highlighting the impacts of sanctions on the residents and tourism of border towns.

Ksenia Poplavskaya, Gerhard Totschnig, Fabian Leimgruber a, Gerard Doorman Gilles Etienne Laurens de Vries) (۲۰۲۰) in his research called the integration of the day market and retransmission to increase cross-border exchanges in the European electricity market, the researcher has 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 in this case 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.

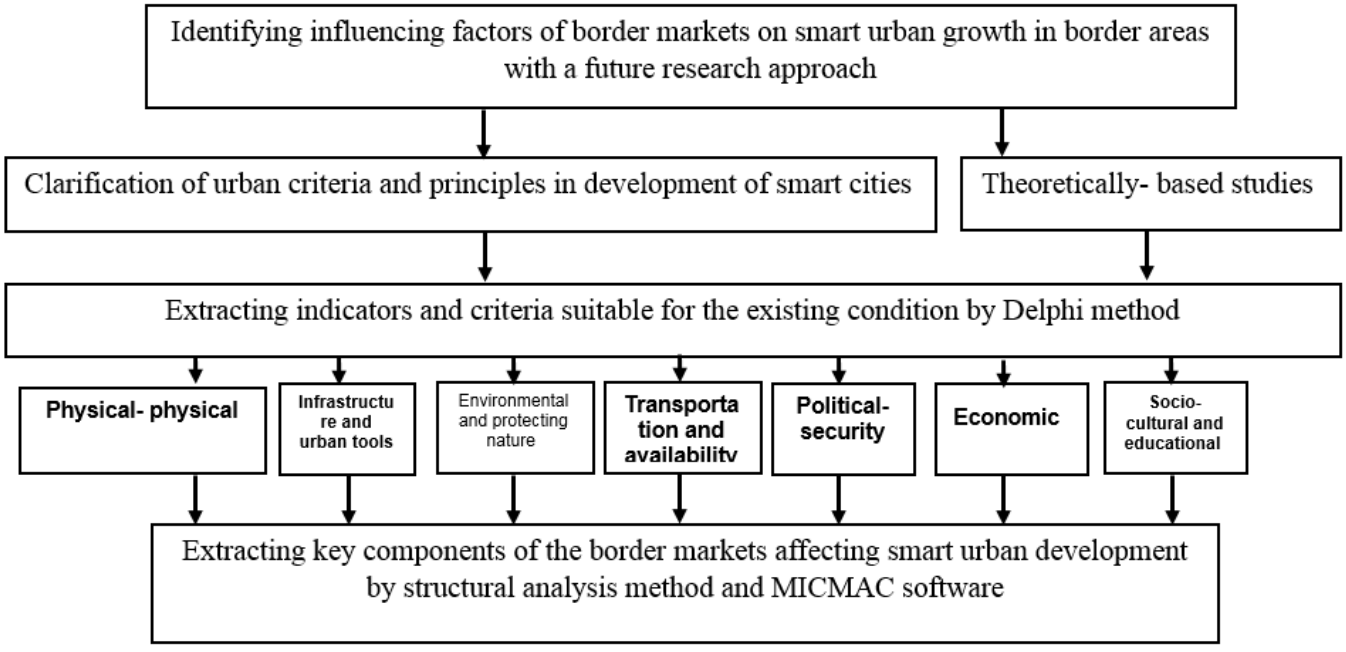
Gathering information from the previous studies carried out on border markets reveals that little research done on smart growth in border areas have just analyzed other aspects of growth and development in the areas. Najafi (۲۰۱۸) in an article entitled "Analysis of factors affecting the development of border cities with a future research approach (case study of the city of Zabol)" has a future- research approach to analysis of factors affecting the development of border cities and the ways they affect each other as well as 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 ۲۵ factors that ultimately lead to the instability of the system. 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 gap of the research 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 areas.

Materials and methods

The research method in this research is descriptive-analytical and based on library and documentary studies as well as field surveys and surveys in Zabol, and its planning horizon (١٤٢٣) is based on the future-research approach. The nature of qualitative data gathering covers collecting required information from the survey method (questionnaire) and Delphi technique, and document studies were also used for its theoretical foundations. The population included ٣٠ experts in this subject selected by the snowball sampling method. Next, based on the obtained information, the questionair was prepared and distributed among the experts by the researcher with ٧ indicators and ٩٤ criteria to rate the variables in ٥ ranges in the framework of the Likert spectrum. After completing the information and obtaining ٨١ criteria to examine the cross effects, the rates were given from ٠ to ٣ under the supervision of experts: "٠" means equal impact, "١"means high impact, "٢" means very high impact, and "٣" means high impact. Then, the rates were entered in the cross matrix of Micmac software to measure the effectiveness of each factor and accordingly, identify the key factors of the research. Research techniques and software included Excel, Delphi method, MicMac. The research process can be seen in Figure No٢

Table ٢: The concept of border from different perspectives

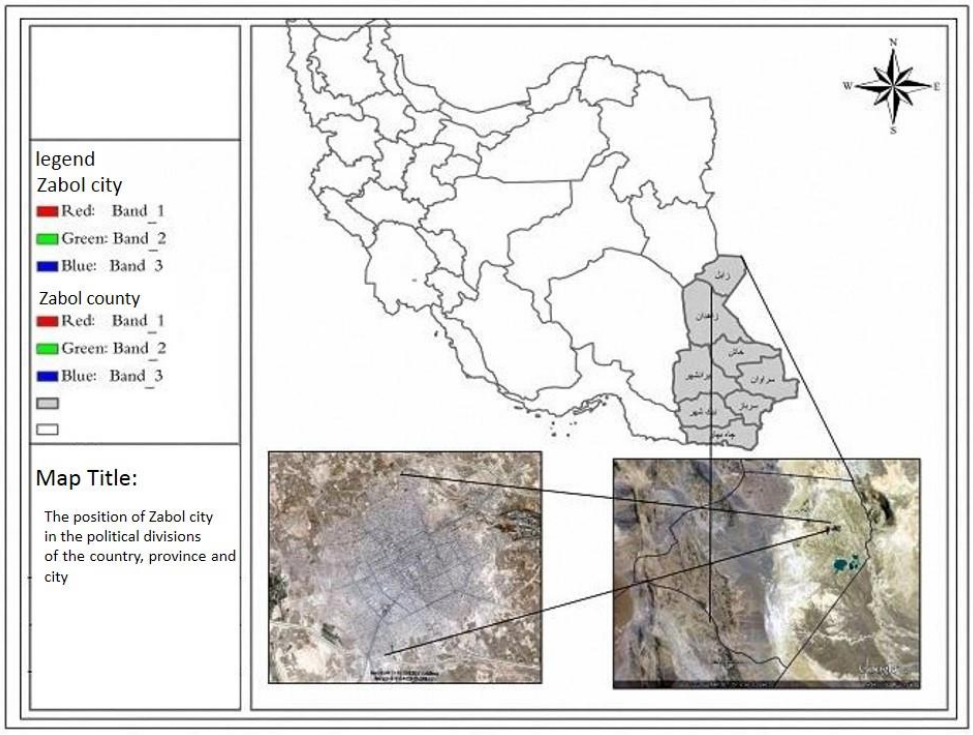


(Source: Authors, ٢٠٢٤)

Introduction of the study area

Sistan and Baluchistan province with a long common border with Afghanistan and Pakistan (٢٠٢١ km: ١١٠٠ km land border and ٣٠٠ 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 ٢٠٨٤ hectares (٨١١٧ km^2), which covers ٠،١٣ of the size of the city.

Fig.١: The location of Zabol in the province and the country

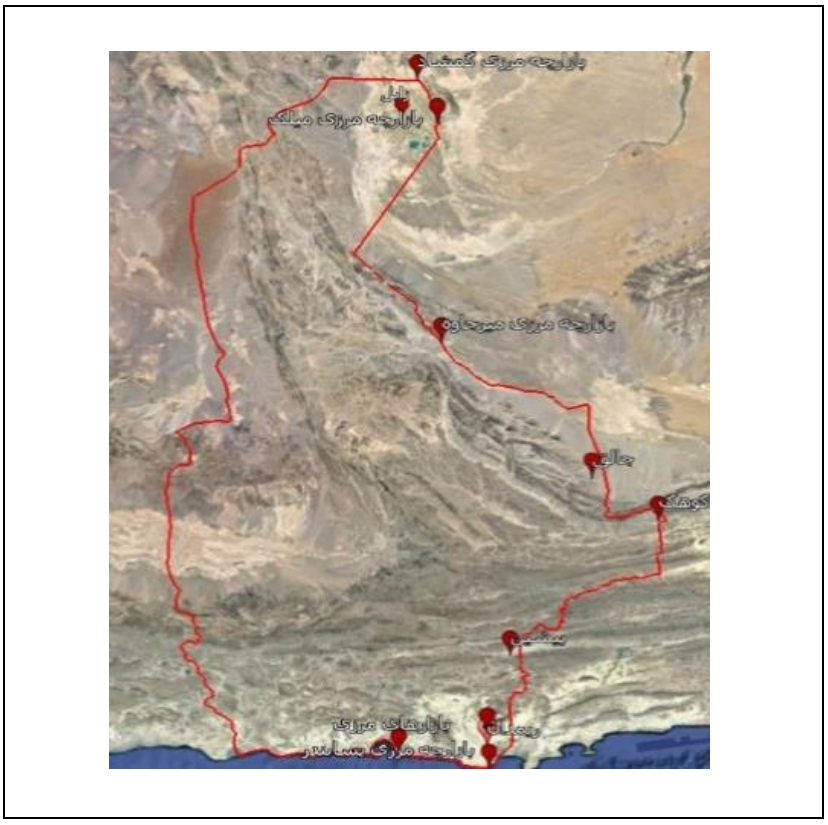


(Source: Authors, ٢٠٢٤)

From the north and northeast, it borders with South Khorasan province, and along the border with Afghanistan, it is adjacent from the south with the cities of Zahk and Zahedan, in the east with, with the newly established city of Hirmand, and from the west with Dasht Lut. This city has a ٢١٦ km long asphalt road to Zahedan, the capital of the province, and it is ١٠٧٨ km away from Tehran. The population of this city is ١٦٥،٦٦٦ people according to the ٢٠١٦ census (Statistical Yearbook of Sistan and Baluchistan Province ٢٠١٦). 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 ٥ urban areas including Zabol, Adimi, Bonjar, Mohammadabad, and Hamon. Although these are currently considered as the new cities of Sistan region, they still have 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, ۱۳۸۵, ۲۵). According to 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 ۱۳ border markets which have the highest number of active markets among the border provinces of the country. Of ۱۳ approved markets, ٦ are on the common border with Afghanistan and ۷ are on the common border with Pakistan, but currently only ۷ markets are active: ٥ on the common border with Pakistan, including Mirjaveh, Pishin, Kohak, Jalq. And Rimdan, and ۲ on the common border with Afghanistan: Milak and Gamshad (Fig. ۲).

Fig.۲: Geographical position of border markets in Sistan and Baluchistan province



(Source: Authors, ۲۰۲٤)

Research findings

Identifying the effective factors of border markets in smart urban development

To identify the primary factors of border markets that in terms of smart urban development affect the future state of the city and the development of border areas, the Delphi method was used. By analyzing the opinions of experts and setting up a self-made questionnaire by the researcher based on the literature and monitoring them during ۳ periods of special testing using the Delphi technique, ۸۱ criteria were recognized and selected as the primary factors for conducting the research.

Table ٣: Classification of the components of border markets that are effective in smart urban growth

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		investment in the private	environmental and construction	fine dust

of women		Females' Employment		hot and unsuitable weather
		amount of revenue from the activity of the free zone		state of waste production
		status of productive and permanent jobs		presence of green space
		state of unemployment		health and cleansing in the city
		amount of land price increase		amount of noise pollution in the living environmen
		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		status of mobile antennas and access to the Internet in border

		firms		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

(Source: Authors, ٢٠٢٤)

The identified and determined criteria were placed in MicMac software. The number of identified criteria is ٨١, the dimension of the matrix is ٨١*٨١. The results can be seen in Table ٣.

Table ٤: Data analysis of interaction effects matrix in MICMAC software

Fillrate percentage	Total	Number of threes	Number of twos	Number of ones	Number of zero's	Number of iterations	Matrix size	Indicator
٩٦,٢٠٤٦٥	٦٣١٢	١١٩٤	٣٠٢٣	٢٠٩٥	٢٤٩	٢	٨١	Value

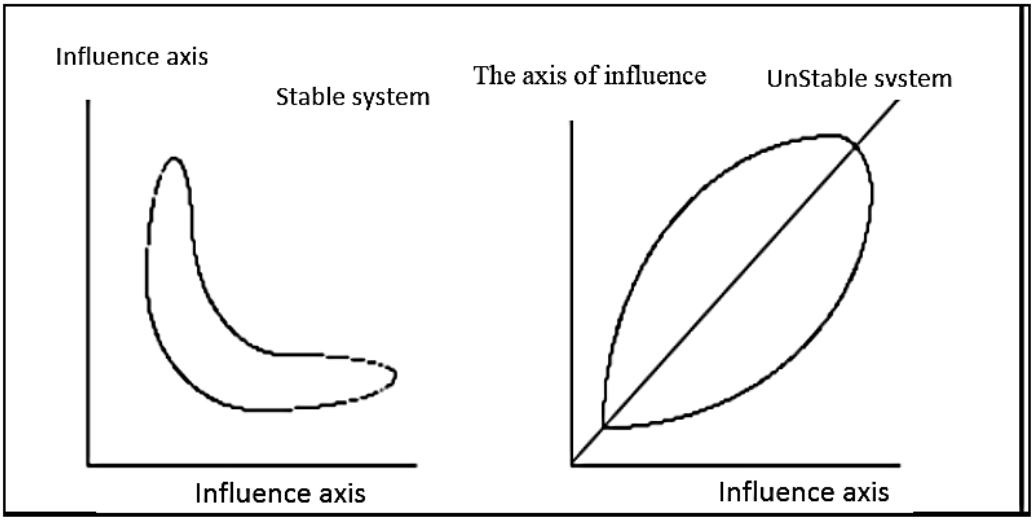
(Source: Authors, ٢٠٢٤)

Based on the results, the degree of fillrating of the matrix, ٩٦,٢٠٪, indicates the high impact of critera on each other, and out of the total of ٦٣١٢ evaluable relationships, ٢٤٩ are ٠ (the indicators have no impact on each other). ٢٠٩٥ are ١ (indicators have little impact on each other), ٣٠٢٣ are ٢ (relatively strong impact of indicators on each other), and ١١٩٤ are ٣ (very strong 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 on the plan shows the overall features of the system. Based on the distribution of key factors on the plan (Fig. ٣), it is determined whether the system is stable or unstable. Unstable systems with both 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.

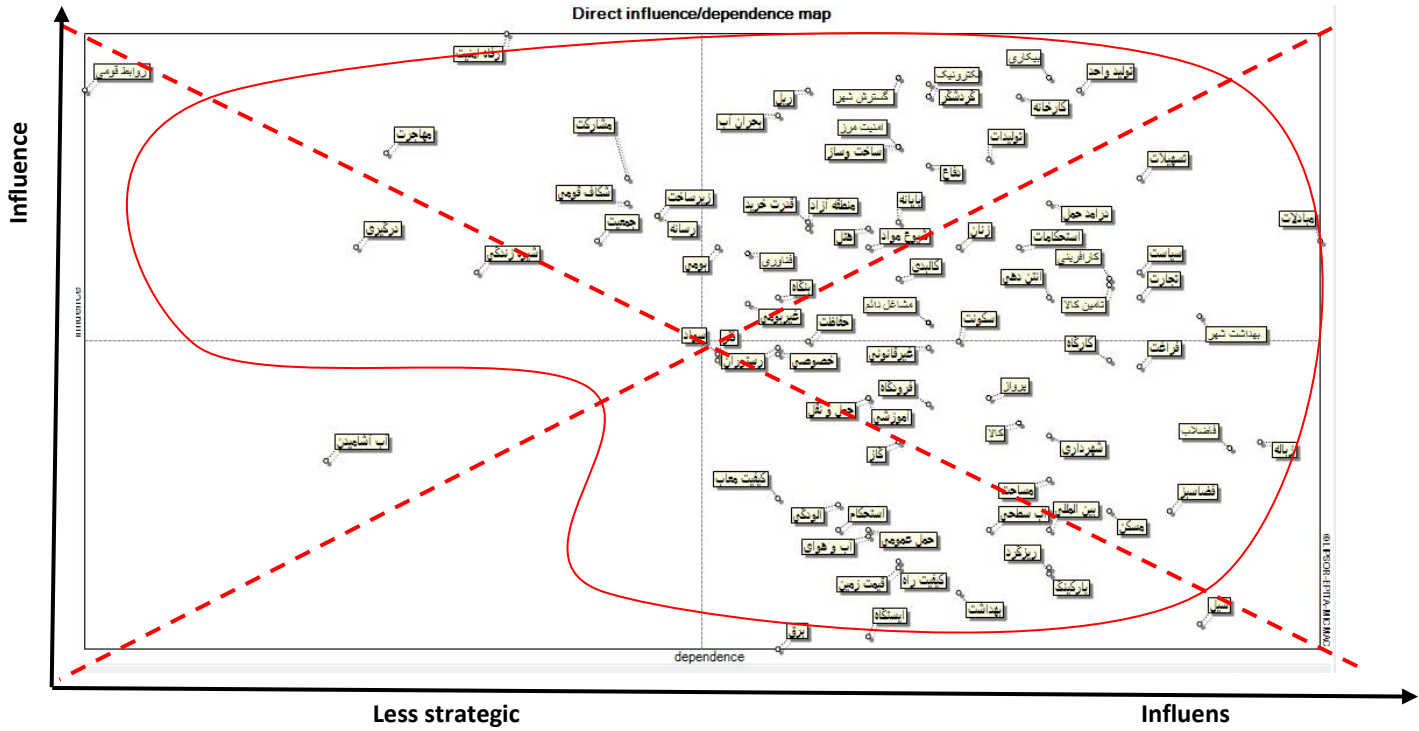
Fig. ٣: Model of stable and unstable systems



(Source: Naeemi et al Quoted by Godet et al, ٢٠٠٣: ٢٢)

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 is stable and the current conditions of the system will not experience significant changes in the future.

Fig. ۴: The status of effectiveness criteria of border markets on smart growth in Zabol



According to the output results of MICMAC, the situation of the components of border markets on smart urban growth in all the mentioned dimensions (such as social, economic, and political) which include the critera in L shape are sustainable, and the current condition overwhelming the urban system will not change and will continue with the existing conditions.

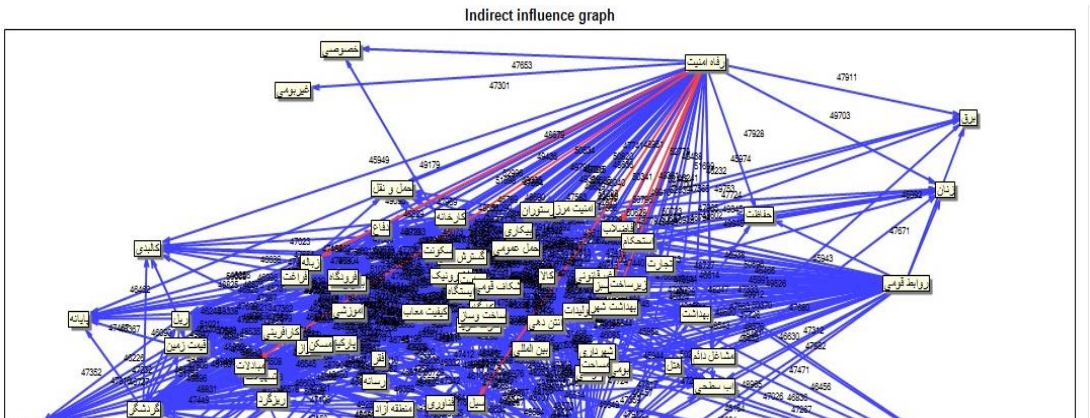
Influence graph analysis in MICMAC software

The influence graph in the software shows the relationships of key factors and the way 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 show that in the graph, the key components of "welfare and social security", "unemployment", "physical expansion of cities", "tourist attraction" are the

(Source: Authors, ۲۰۲۴)

Origins of the strongest impacts and have increased their role in the system. On the other hand, the key factors of "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 strongly influenced by other key factors .

Fig. ۵: Direct impacts between key components in relation to border markets and smart urban growth



(Source: Authors, ٢٠٢٣)

Rank	Indicator	Influential	Indicator	Influenced	Indicator	Influential	Indicator	influenced
١	security welfare	١٦٢	exchanges	١٣٥	security welfare	١٦٢	exchanges	١٣٥
٢	unemployment	١٥٦	garbage	١٣٣	Physical urban expansion	١٥٦	garbage	١٣٣
٣	Physical urban expansion	١٥٦	sewage	١٣٣	tourist	١٥٦	sewage	١٣٣
٤	tourist	١٥٦	Urban health	١٣٢	unit production	١٥٥	Urban health	١٣٢
٥	Ethnic relations	١٥٥	fllod	١٣٢	unemployment	١٥٥	flood	١٣٢
٦	Unit production	١٥٥	Green space	١٣١	Ethnic relations	١٥٥	Green space	١٣١
٧	rail	١٥٥	Facilities	١٣٠	firm	١٥٤	Facilities	١٣٠
٨	Firm	١٥٤	Business	١٣٠	Rail	١٥٣	etertaintment	١٣٠
٩	Electronics	١٥٤	Politics	١٣٠	Water crisis	١٥٢	Business	١٣٠
١٠	Water crisis	١٥١	Entertainment	١٣٠	Electronics	١٥٢	Politics	١٣٠
١١	Border security	١٤٧	goods Supply	١٢٩	construction	١٤٧	housing	١٢٩
١٢	Construction	١٤٧	Entrepreneurship	١٢٩	border security	١٤٦	Goods supply	١٢٩
١٣	Immigration	١٤٦	workshop	١٢٩	immigration	١٤٥	workshop	١٢٩
١٤	Products	١٤٥	housing	١٢٩	Products	١٤٥	Entrepreneurship	١٢٩
١٥	Defence	١٤٥	Unit production	١٢٨	Defence	١٤٥	Unit production	١٢٨
١٦	participation	١٤٣	Unemployment	١٢٧	participation	١٤٢	Unemployment	١٢٨
١٧	Facilities	١٤٣	Transport revenue	١٢٧	Transport revenue	١٤٠	signal strength	١٢٨
١٨	Ethnic gap	١٣٩	International	١٢٧	Facilities	١٤٠	Transport revenue	١٢٨
١٩	Transportation revenue	١٣٩	finedust	١٢٧	Media	١٣٨	Parking lot	١٢٨
٢٠	Media	١٣٨	municipality	١٢٧	free zone	١٣٧	finedust	١٢٧
٢١	Infrastructure	١٣٨	parking lot	١٢٧	purchasing power	١٣٧	municipality	١٢٧
٢٢	Purchasing power	١٣٧	signal strength	١٢٧	Infrastructure	١٣٦	area	١٢٧
٢٣	Terminal	١٣٧	area	١٢٧	ethnic gap	١٣٦	international	١٢٧
٢٤	Free zone	١٣٦	Goods	١٢٧	Terminal	١٣٥	firm	١٢٧
٢٥	hotel	١٣٦	firm	١٢٧	females	١٣٥	goods	١٢٦
٢٦	population	١٣٤	fortifications	١٢٧	hotel	١٣٥	fortifications	١٢٦
٢٧	Transfers	١٣٤	Products	١٢٦	population	١٣٥	flight	١٢٦
٢٨	Conflicts	١٣٣	flight	١٢٦	Transfers	١٣٥	surface water	١٢٦

٢٩	Drug pervalance	١٣٣	surface water	١٢٦	Conflicts	١٣٤	Products	١٢٥
٣٠	females	١٣٣	females	١٢٥	native	١٣٤	settlement	١٢٥
٣١	native	١٣٣	health	١٢٥	Drug pervalance	١٣٤	health	١٢٥
٣٢	fortifications	١٣٣	settlement	١٢٥	fortifications	١٣٤	females	١٢٥
٣٣	technology	١٣٣	Permanent jobs	١٢٤	technology	١٣٣	Tourist	١٢٤
٣٤	life style	١٣٠	Turist	١٢٤	life style	١٣٢	Defence	١٢٤
٣٥	politics	١٣٠	Electronics	١٢٤	agency	١٣٠	illegal	١٢٤
٣٦	Entrepreneurship	١٢٩	Defence	١٢٤	Entrepreneurship	١٣٠	airport	١٢٤
٣٧	Physical	١٢٩	illegal	١٢٤	politics	١٢٩	Permanent jobs	١٢٤
٣٨	Goods supply	١٢٨	airport	١٢٤	signal strength	١٢٨	electronics	١٢٤
٣٩	agency	١٢٧	Land price	١٢٣	Business	١٢٨	gas	١٢٤
٤٠	business	١٢٧	border security	١٢٣	Goods supply	١٢٨	physical	١٢٤
٤١	signal strength	١٢٧	terminal	١٢٣	non native	١٢٥	terminal	١٢٣
٤٢	Non native	١٢٦	Construction	١٢٣	Physical	١٢٥	urban expansion	١٢٣
٤٣	Urban health	١٢٤	gas	١٢٣	Urban health	١٢٤	road quality	١٢٣
٤٤	Permanent jobs	١٢٣	road quality	١٢٣	restaurant	١٢٣	Land price	١٢٣
٤٥	security	١٢١	Urban expansion	١٢٣	Permanent jobs	١٢٣	Construction	١٢٣
٤٦	settlement	١٢١	Physical	١٢٣	settlement	١٢٠	border security	١٢٣
٤٧	restaurant	١٢٠	Drug pervalance	١٢٢	private	١٢٠	transportation	١٢٢
٤٨	illegal	١٢٠	educational	١٢٢	literacy	١٢٠	educational	١٢٢
٤٩	literacy	١١٩	hotel	١٢٢	security	١١٩	hotel	١٢٢
٥٠	private	١١٩	transportation	١٢٢	poverty	١١٩	public transportation	١٢٢
٥١	poverty	١١٨	public transportation	١٢٢	illegal	١١٨	station	١٢٢
٥٢	workshop	١١٨	station	١٢٢	flight	١١٨	weather	١٢٢
٥٣	entertainment	١١٧	weather	١٢٢	workshop	١١٧	Drug pervalance	١٢٢
٥٤	educational	١١٣	pollution	١٢١	entertainment	١١٦	pollution	١٢٢
٥٥	transportation	١١٣	fortification	١٢١	transportation	١١٣	fortification	١٢٢

٥٦	flight	١١٣	free zone	١٢١	educational	١١٣	free zone	١٢٠
٥٧	airport	١١٢	purchasing power	١٢١	airport	١١٣	rail	١٢٠
٥٨	goods	١١٠	security	١٢١	goods	١١٠	electricity	١٢٠
٥٩	municipality	١٠٨	rail	١٢١	municipality	١١٠	security	١٢٠
٦٠	waste	١٠٧	private	١٢٠	waste	١٠٦	Purchase power	١٢٠
٦١	gas	١٠٧	restaurant	١٢٠	gas	١٠٥	restaurant	١٢٠
٦٢	sewage	١٠٦	agency	١٢٠	sewage	١٠٥	private	١٢٠
٦٣	drinking water	١٠٤	water crisis	١٢٠	drinking water	١٠٤	agency	١٢٠
٦٤	area	١٠٢	pathway quality	١٢٠	area	١٠٣	pathway quality	١٢٠
٦٥	pathway quality	٩٩	electricity	١٢٠	pathway quality	٩٩	water crisis	١٢٠
٦٦	pollution	٩٨	non native	١١٩	green space	٩٩	non native	١١٩
٦٧	green space	٩٨	technology	١١٩	pollution	٩٩	technology	١١٩
٦٨	housing	٩٨	poverty	١١٨	housing	٩٨	literacy	١١٨
٦٩	international	٩٥	literacy	١١٨	public transportation	٩٦	poverty	١١٨
٧٠	public transportation	٩٥	native	١١٨	surface water	٩٦	native	١١٨
٧١	surface water	٩٥	media	١١٦	fortification	٩٥	media	١١٦
٧٢	fortification	٩٥	Infrastructure	١١٦	international	٩٥	Infrastructure	١١٦
٧٣	weather	٩٤	participation	١١٦	weather	٩٥	ethnic gap	١١٦
٧٤	road quality	٩١	ethnic gap	١١٦	Land price	٩٣	participation	١١٦
٧٥	Land price	٩٠	population	١١٥	Finedust	٩٠	population	١١٥
٧٦	parking lot	٩٠	security welfare	١١٢	parking lot	٨٩	security welfare	١١٢
٧٧	finedust	٨٩	life style	١١١	road quality	٨٩	life style	١١١
٧٨	health	٨٧	immigration	١٠٩	health	٨٧	immigration	١٠٩
٧٩	flood	٨٢	Conflict	١٠٨	flood	٨٢	Conflict	١٠٨
٨٠	Station	٨١	drinking water	١٠٧	Station	٨١	drinking water	١٠٧
٨١	electricity	٧٩	ethnic relations	١٠٠	electricity	٧٨	ethnic relations	١٠٠

Table ٤ examines the degree of direct and indirect impacts of each 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 ٥, the results show that the factor "welfare and social security" with a weighted average (١٦٢)

has the most impact and the next priorities are unemployment (١٥٦), physical expansion of cities (١٥٦), and tourist attraction status (١٥٦).

Table. ٥: Weighted average and ranking of the influencial and influenced degrees of the components of border markets on smart urban growth

(Source: Authors, ٢٠٢٤)

Of ٨١ identified key indicators, ٢٠ factors in the table below directly and indirectly are more influencial in relation to the indicators of border markets on smart urban growth.

Table ٦: Directly and indirectly identified key indicator

Row	Indicator	Row	Indicator
١	The state of welfare and social security	١١	The state of public scary spaces in the city with the increase of constructions
٢	unemployment status	١٢	immigration status
٣	The physical expansion of the city.	١٣	The state of benefiting from local products
٤	The amount of tourist attraction.	١٤	Defense of sovereignty in the internal and external dimension
٥	ction status of production units and factories ١٥	١٥	The amount of employment creation facilities
٦	Rail connection	١٦	Participation of local people in Bazarche administration
٧	Relations and trust of relatives	١٧	Transportation revenue
٨	Creating production units and creating factories	١٨	Preventing ethnic and tribal divisions
٩	The state of water crisis and drought	١٩	More activity in social media
١٠	border security	٢٠	use of electronic services

(Source: Authors, ٢٠٢٤)

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 in 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. As a result of such special significance, paying greater attention to the cities located in these areas is a

Necessity for developing future plans and programs. In this way, identifying the strengths, weaknesses, opportunities and threats (SWOTs) will promote the growth and development of these regions. Meanwhile, using border markets which act as a key factor in development of border cities can contribute to growth of the regions. Besides, it offers positive and significant effects in

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 in the field of development. have many and because of having income from export and trade and storage of goods, they have a lot of importance, so the expansion of border markets as a key and strategic factor will be able to 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 future research approach which acts as a new tool to plan appropriate to the region in this area, and in turn, lead to sustainable development. One of the most important features which differentiates this research from other scientific researches 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 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 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 Delfi method, and then, cross influence approach was used to identify the driving forces among the above- mentioned key factors.

٨١ identified key factors were arranged in an ٨١ x ٨١ matrix in MICMAC software. The degree of relationship is measured with numbers ranging ٠ to ٣. Considering that the number of repetitions is two times, the results showed that the degree of filling of the matrix is % ٩٦,٢٠ indicating the great influence of the criteria on each other. Of a total of ٦٣١٢ evaluated relationships, ٢٤٩ were ٠ (indicators had no effect on each other), ٢٠٩٥ were ١ (indicators had little effect on each other), ٣٠٢٣ were ٢ (indicates had a relatively strong influence on each other), and ١١٩٤ were ٣ (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 fore-mentioned dimensions (including social, economic, political) is stable, so that the current conditions governing the urban system will not change in the future and will continue with the existing conditions.

Lack of proper infrastructure and environmental resources such as instability of settlements, security, physical development, transportation and economy have adversely affected the development of Zabol. The key components of "welfare and social security situation", "unemployment", "physical expansion of the city", and “tourist attraction situation" in the region which had the greatest effects can slightly improve the situation of the city. On the other hand, the key factors of "expansion of cross-border exchanges" "garbage production situation", "wastewater disposal situation", "city surface sanitation", "occurrence of floods and waterlogging", "existence of green space" were strongly influenced by other key components, so these are among the factors which require further attention to improve the situation of 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 research "analysis of components of border markets and development measures in the city of Zabol", the key points effective on 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 elimination of rail shortages and development of the communication network. In fact, by paying attention and giving importance to the development of the border cities, the development of the region 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 so far the city has experienced numerous challenges and problems in its growth and development process, it is suggested to create a long-term perspective for building physical, 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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