Analytical study: Development potentials to specify the economic basis of Karbala Governorate - Iraq

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Abstract. The process of determining the economic basis of a governorate is achieved through studying the potentials and the resources hidden in that region, then analyze them with the help of tools in this field. One of these tools is the methodology of provincial unit average that is coincided to be one of the effective methods used in special analysis and studying the effectiveness of location in the governorates under study. The aims are to study and analyze the development potentials of Karbala governorate regularities to determine the economic basis on which these regularities are based, in order to guide those regularities to reasonable development trends within their available potentials. This is achieved by activating and directing the potentials to correspond to the implicit potential in that place. It has been found that Karbala has many characteristics and neglected capabilities that can be promoted to provide the region with important products and job opportunities that help to bridge the unemployment gap that Iraq generally, and Karbala in particular. The strategic location of Karbala has an active role in providing many neighboring governorates with resources and capabilities that help their development and advancement to form an effective growth pole for the development of activities at the national level.

1. Introduction

Spatial difference problems of social and economic development levels are a global phenomenon in many economic systems during their different development stage. The interest of studying the role special development in the attempt to standardize the specialty and activate the openness through diversity has emerged. In addition to ignoring the special dimension in the development process for long years while focusing on the sectorial dimension alone, and this is the core problem behind the first thought of developing the planning in spatial development field that was and still causing argument among economic planners and spatial development planners and other branches of human knowledge. Hence the need to develop a scientific methodological idea for the concept of spatial development emerged, taking into account the variables affecting the determination of industrial signature trends in the light of the spatial development process, as it represents a series of long-term planning processes with comprehensive dimensions (economic, social, physical, environmental).
2. The requirements of spatial development (understanding the spatial economic structure)

The spatial signature policy for economic (industrial) activities must be based on achieving a state of compatibility between that policy and the requirements for spatial development, and according to a set of considerations represented by the following:

- Industrial performance efficiency considerations, there are several indicators by which the efficiency of industrial performance is measured, the most important of which are (production value, value added, measures of production, etc.) [1].

- Economic considerations in the spatial signature of industry, the most important of which are:
  a). The availability of raw materials, it is related to the quantity and quality and the extent of continuity of supply; b). The efficiency of the transportation network; c). Availability of services and infrastructure and d). The availability of a range of functional relationships among existing activities to serve the relationships of industrial interference [2].

- Social considerations: which collectively constitute a goal or principle of signing industrial activities or projects.

- Geostategic considerations: It is all that related to the national security of the state, through the spatial distribution of investment, the lack of concentration on strategic projects in a few cities [3].

This is achieved either by understanding the type of functional linking relationships, or by balancing the use the physical components of regions as (natural and demographic resources, land shape, and geographic characteristics) so; the resources exploitation does not exceed the rates of natural renewal [4].

3. Classifying the functions that determine the economic basis in the study area

A group of specialized and interconnected functional activities dominate the urban space, the percentage of domination imposed by these activities varies and they are distributed in a different form drawn by the quality of the activity, the degree of its importance, its ability to compete and the pattern of interaction among the activities. The percentage occupied by each function does not represent its actual importance, neither economically nor socially, because the economic factor leaves its effective impact in determining the quality of use and the place it occupies from the urban space of the city [5].

3.1. Commercial function

The small spatial space occupied by this function does not reflect the small number of its employees, on the contrary, we see that the commercial activity includes a high percentage of the workforce, although it does not exceed 5% of the urban area in American cities, it includes 40% of the workforce [6]. These commercial establishments also create the appropriate environment for the interaction of other function due to its potential of attracting some large institutions that compete with other institutions for their ability to pay high rent due to the profits they receive [7].

3.2. Industrial function and natural resource

Industry is the basis of the economic and Civilized sophistication progress of a region, as it is in a continuous state of production as human life and its requirements continue. The city of Karbala has the advantage of containing many key industries and process industries, so the industry is considered to be one of the main activities that Karbala governorate depends on. It should be noted that the western desert contains a large percentage of the natural reservoirs representing the industrial function as shown in the Figure 1, which it affected not only the boarders of the containing region, but extended its effect to a national level.

3.3. Transportation function

Transport activities with a regional impact are an important aspect to define the economic basis of the regions, in addition to their role in activating the functional interconnection between the regions. They
are, in addition to their regional role, an essential factor in building cities, developing them, enhancing their efficiency and the performance of their various functions. The interaction and integration among different activities cannot occur within a region or between one region and another unless movement and transportation are available [8].

Many countries work to improve the status of their airports and develop them in order to be used in hosting transit aircraft instead of the airports of neighboring countries, it is known that this activity has a significant effect in moving the trade of the cities in which these airports are located. This activity is carried out by the UAE to have the largest share of transit trips among Gulf states that is located in the middle (East and West) [9]. Therefore, the transportation activity can be introduced to the study area (Karbala), as it contains the tombs of the martyrs of Taf battle (PBUT) to activate religious visits and benefit from the incomes resulting from that transportation process, in addition to its closeness to the largest commercial center in Iraq, that is Baghdad.

3.4. The function of religious tourism

The religious function has an important role in determining the economic basis of regions, especially in the Arab world. The religious function is featured by the active ability to move many activities [10] as commercial, hotel, and architecture activities. It should be referred that Iraq contains four cities of religious feature, namely (Karbala, Najaf, Samarra and Baghdad). The city of Karbala, which includes the holy shrine of Imam Hussein (peace be upon him), is considered the spiritual center of a large group of Muslims in the world. The million marches in the first month of the Islamic calendar represent the best evidence to the role played by the city in this activity and its consequent various activities such as transport, hotel, trade and the visitors to Karbala city in 2018 reached to 10 millions over the world.

Figure 1. Map of natural resources.
4. Methods of development potential's analyzing
The planning process aims to enhance comprehensive development and its economic, social, physical and environmental dimensions in a collaboration of material and non-material factors in society. Accordingly, the focus should be on the interaction of production elements (quantitative and qualitative) in the development process according to the available factors in the given spatial space. These factors may be any economic activity, labor, health and education services, infrastructure services, efficiency of the transportation network, the availability of energy sources including environmental determinants or any factor that contributes to the necessities of functional performance for the new investment [11].

These necessities are based on the importance of understanding the interconnections and interactions in the various economic activities with the new investment and that have a negative or positive impact on the development of the region. This requires researching scientific methods that show the reality with all its details of the available development capabilities in order to produce the best and most suitable site for establishing the new industrial activity conforms with the characteristics of development factors in that space. And three methods from these techniques can be included: Spatial convenience method, The method of regional units average, GIS and Its Related Technologies Method [12]. The most important requirement for the process of understanding the spatial structure or determining the appropriate activities for spatial economic development to get out of the regional's specialty is to determine the potential's structure [13] depending on the characteristics of that region.

5. The method of regional units average
This model is used to analyze the development potential of the regions by studying the regional units represented by: the industrial units, the availability of the workforce and the raw materials and regional marketing sites, in addition to energy sources, regional transportation and the ranges of pollution caused by industries to human settlements in the case of using this model to determining the possible locations of industrial settlement [12]. The methodology was built in three stages, the first was represented with preparing a network of regional squares that were designed to cover all of the studied area with dimensions that meet the aim of the study and these squares were numbered. The second stage is setting tables of surveyed data that is countable and classifiable as labor, available power resources, water resource, amount of available raw materials etc., while the third stage represents table of weights.
depending on the questionnaire that was carried out based on a sample from specialists from the development field. They were filled depending on the data collected in the second stage (labor, drainage market, product price), and the regional squares (energy sources, water sources, raw materials, etc.) as shown in the sample of the three Tables 1, 2, 3.

Table 1. The sample of cell no. 1.

| Major objective | Manor Objective | Value | Sum |
|-----------------|----------------|-------|-----|
| Economic savings | Availability of raw materials | 8 | 23 |
| | Distance to the market | 6 | |
| | Labor availability | 3 | |
| | The price of the product | 4 | |
| Infrastructure service | Water | 1 | 9 |
| | Electricity | 5 | |
| | Transport and communication | 4 | |
| Spatial suitability | Pollution | 6 | 14 |
| | Earth suitability | 3 | |
| | Compatibility with neighboring uses | 7 | |

\[ C_1 = 23 \times 10 + 9 \times 5 + 14 \times 8 = 5 \]

Table 2. The sample of cell no. 2.

| Major objective | Manor Objective | Value | Sum |
|-----------------|----------------|-------|-----|
| Economic savings | Availability of raw materials | 3 | -5 |
| | Distance to the market | 4 | |
| | Labor availability | 6 | |
| | The price of the product | 2 | |
| Infrastructure service | Water | 4 | 3 |
| | Electricity | 1 | |
| | Transport and communication | 2 | |
| Spatial suitability | Pollution | 4 | 1 |
| | Earth suitability | 1 | |
| | Compatibility with neighboring uses | 2 | |

\[ C_2 = -5 \times 10 + 3 \times 5 + 1 \times 8 = 3 \]

Table 3. The sample of cell no. 3.

| Major objective | Manor Objective | Value | Sum |
|-----------------|----------------|-------|-----|
| Economic savings | Availability of raw materials | 1 | 4 |
| | Distance to the market | 4 | |
| | Labor availability | 4 | |
| | The price of the product | 3 | |
| Infrastructure service | Water | 5 | -7 |
| | Electricity | 3 | |
| | Transport and communication | 1 | |
| Spatial suitability | Pollution | 8 | 11 |
| | Earth suitability | 2 | |
| | Compatibility with neighboring uses | 6 | |

\[ C_3 = 4 \times 10 - 7 \times 5 + 11 \times 8 = 18 \]
Table 4. The values of cells depending on statistics.

| Cell No. | Value | Cell No. | Value | Cell No. | Value |
|----------|-------|----------|-------|----------|-------|
| 1        | 5     | 14       | 6     | 27       | 2     |
| 2        | 3     | 15       | 4     | 28       | -7    |
| 3        | 18    | 16       | -20   | 29       | -13   |
| 4        | 10    | 17       | 5     | 30       | 17    |
| 5        | 6     | 18       | 15    | 31       | 8     |
| 6        | 25    | 19       | 12    | 32       | 3     |
| 7        | 22    | 20       | 3     | 33       | -8    |
| 8        | 43    | 21       | 17    | 34       | 3     |
| 9        | -15   | 22       | 26    | 35       | -14   |
| 10       | 20    | 23       | 11    | 36       | -19   |
| 11       | -4    | 34       | 4     | 37       | -32   |
| 12       | 21    | 25       | -5    | 38       | -14   |
| 13       | 28    | 26       | 4     | 39       | -45   |

A network of squares was prepared for the maps of (industrial sites, natural resources, water resources, settlements, population, agricultural land) (as reality) of which the network is shown on a sample of industrial sites map (for shortcut) as illustrated in Figure (3). This network is (10*10) Km represent the range to which the labor reach easily and the extent to which the pollutants can reach with other considerations as the ability to provide water, power etc., also these squares were divided into halves (5*5) Km and even smaller divisions with dimensions (1*1) Km to reduce distance measurements while measuring weights. These squares included all the space of the governorate to calculate the regional units all over it.

Figure 3. the map of natural reservoirs and sources with the network of the regional units.

As shown in Figure 3, the map was numbered and obtained (39) squares three of which were taken by Hindiyah district, while Ayin-Altamer occupied (13) squares each depending on the area. Following is a statistical sample for three cells of (39) cells for abbreviation shown in Tables 1, 2 and 3. Depending on the data that was collected from all (39) table, the results in Table 4.
6. Results
Based on data shown in Table 4 above, it is possible to classify the cells that are nominated to establish industrial, productive and investment units as follows: (3 – 6 – 7 – 8 – 10 – 12 – 13 – 21 – 22 – 27 – 30 – 34) and they are concentrated in each of (Husayniyah district, Ain al-Tamr district, Al-Hindiya district, Karbala district). At reviewing the cells and their values we find that many cells contain very significant reservoirs as (Oil) but the value of the cell doesn't rise to the required level to establish the activities on them and to determine the economic base depending these reservoirs, as cells (25 and 34). This is because the lack of potentials represented by labor and infrastructure required for extraction. Here, decision makers should join hands and direct capital to revive the region. The reason for not using the site may be due to the availability of alternative sites and the abundance of the oil product currently in the regions of southern Iraq as well as its proximity to the workforce and the port for the purposes of disposal. From Table 5, it is noticed that despite of the obtained results of the development potentials – for Karbala Governorate cells – depending the activities within the borders of Karbala districts give approximate development results in the range (23% - 31%). While depending on the efficiency of the place and available potentials within the border of each lot of a district, they showed a variation in the effectiveness values of that place, where the values ranged between (17% - 35%).

Table 5. Efficiency spatial concentration of activities and development potentials.

| Details               | Husainiah | Ain Al-Tamr | Al-Hindiya | Karbala |
|-----------------------|-----------|-------------|------------|---------|
| Spatial concentration | cell      | 3           | 7          | 8       | 10       | 18         | 27         | 6         | 12       | 21       | 22       | 13       | 30       | 34       |
| of activities         | Percentage| 23%         | 31%        | 23%      | 31%      | 23%        | 23%        | 23%       | 23%      | 23%      | 23%      | 23%      | 23%      | 23%      |
| Development           | value     | 18          | 22          | 43       | 20       | 15         | 2          | 25        | 21       | 17       | 26       | 28       | 17       | 3        |
| Potentials            | Sum       | 83          | 37          | 89       | 43       | 33%        | 15%        | 35%       | 17%      | 33%      | 15%      | 35%      | 17%      | 33%      |
| Percentage            |           |             |             |          |          |            |            |           |          |          |          |          |          |          |

Based on table 5, the readings refer to indicators that support establishing industrial and agricultural activities in Hindiya district followed by Hussainiya district, then Karbala district which is featured by religious tourism activity along with extraction activities. After these districts coms Ayn Al-Tamr in which constructional industries are remarkably concentrated, it is an indicator for dedicating capitals and efforts in order to activate constructional industries in the mentioned area since the conditions and surrounding environment are suitable for these products in the current time.

7. Conclusion
The study indicated that natural resources have an essential role in providing many neighboring governorates with constructional materials, especially for cities around the area, and specifically those witnessing large constructional development, where most governorates depend on constructional materials imported from abroad or north of Iraq. Showing the data, it is noticed that agriculture has an important role for the availability of water and soil resources. It is also noticed that a large ratio of study area lands are arable, but they lack to attention and directing the efforts to advance this sector, especially in Hindiya and Ayn Al-Tamer sections due to the presence of agriculture factors, labor and experience as shown in questionnaires. It is also shown that religious tourism play a significant economic role related to many activities in the city, as moving the commercial sector, hotel sector, transportation, and communication on internal and external levels. Signing an airport in this region would give the city an economic dimensions bring the city significant revenues, where the governorate would be able to attract
flights that transport passengers from Europe and Africa to Australia and east of Asia (Transit stops) considering it a competitor that has a religious and tourism effectiveness if compared to Arab Gulf countries.

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