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Statistical analysis of industrial laboratories in Nahrawan sub-district and adjacent areas for the year 2022

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Abreact

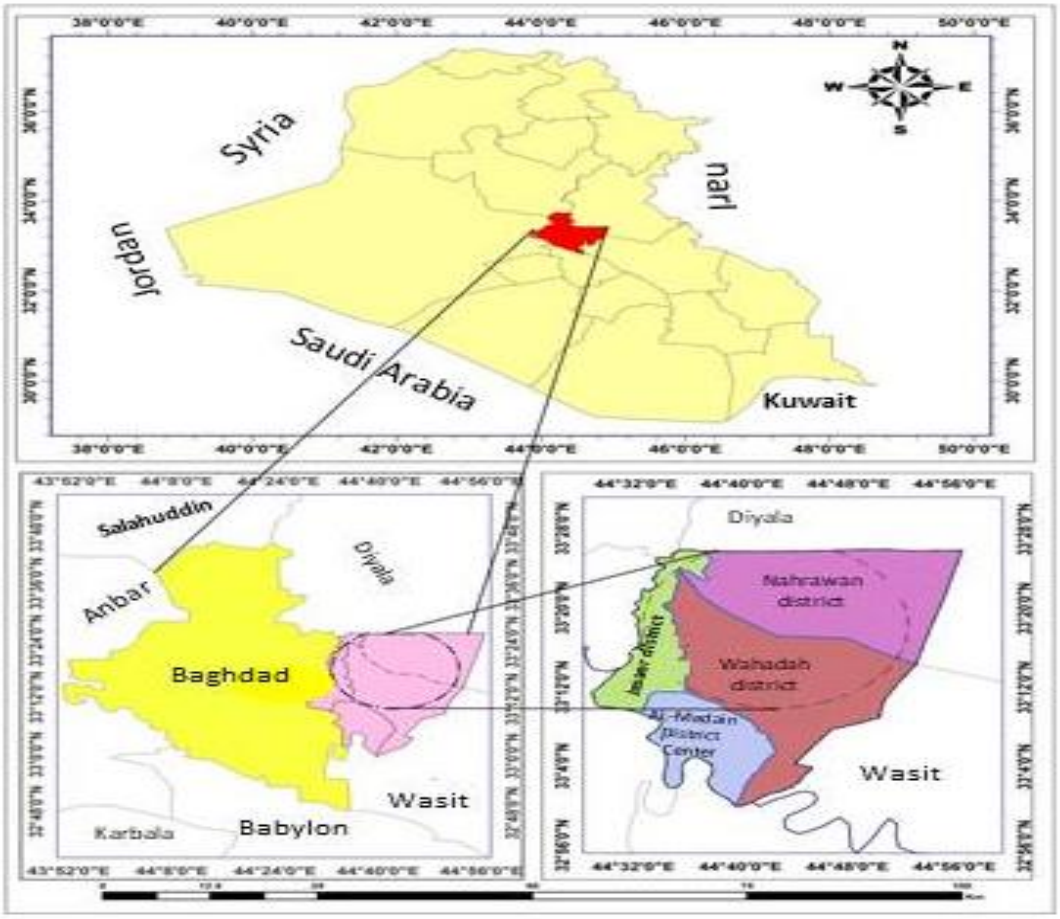
Introduction Research problem What are the local patterns that characterize the industries in the Nahrawan sub-district and adjacent areas? Is there a discrepancy between the statistical variables of the set of industrial indicators?Is it possible to apply strategic analysis (SWOT) for industrial plants in the Nahrawan sub-district and its vicinity? **Research Hypothesis** There are endemic site patterns that have characterized the industries in the Nahrawan sub-district and adjacent areas as well as their diversity. There is a discrepancy between the industrial indicators within the values of the central tendency,as well as a strategic analysis of the factors of success of the industrial laboratories in the Nahrawan sub-district and its vicinity. **The Research objectives** Identifying the type of industries in the Nahrawan sub-district and its neighboring areas and the extent of their development potential by analyzing their human and economic indicators and identifying their potentials that help to expand and diversify them and the threats that weaken them and reduce their development opportunities. **Spatio-temporal delimitation of study** Spatial delimitation : The Nahrawan sub-district and the adjacent areas represented by the areas closest to and farthest from the center of the sub-district are(Al-Khansa, 9Nisan, Al-Karghouliya and Al-Ihsan villages), which are located within the Madain district of Baghdad governorate to the east of it and extend to its south-east between a latitude (=55 ’ 9 °33 - =38 ’ 26 °33) to the north and a longitude (=29 ’ 52°44 ’ -=41 ’ 32°44 ’ East) of the Diyala River, which

extends to the south-west and adjacent to Wasit from the east and Diyala governorate from the north and northeast, as shown in the map(1). As for the temporal dimension, the research was limited to studying the reality of the situation for 2022.

Keywords

Statistical analysis of industrial laboratories, Nahrawan sub-district

Map(1) Study Area



Source: The work of the researcher using the ArcGis10.8program

Statistical analysis of industrial laboratories indicators in Nahrawan sub-district and adjacent areas

In this research, we discuss the analysis of the set of values of industrial indicators with a statistical analysis to clarify the variation in the indicators and clarify the statistical importance of each industry based on the numerical data of the industrial indicators collected in the field for the year 2022 and as shown in Table(1). It was analyzed based on the statistical program (spss) and the program (Excel) for industrial laboratories in the Nahrawan sub-district and adjacent areas for the private and public industrial sector

Table (1) Productivity indicators for industrial laboratories in Nahrawan and adjacent areas for 2022

No.	Industry	Numbers of the factories	Manpower	Manpower wages	The value of raw materials/ in dinars	fuel value	Production Value/Dinar	Capital in dinars
1	Food industry	27	122	1508500	29747800	317500	42550000	1757350000
2	Pharmaceutical industries	1	120	2688000	5781520	110000	18002630	2000000000
3	Extractive industries	1	640	375250000	21705600	0	4499200000	4,500,000,000
4	Asphalt industries (Pet. Eng.)	8	83	11331500	16056000	312500	19200000	3344800000
5	Leather Industries	42	101	2535000	6000000	300000	9000000	4,500,000,000
6	Insulation Materials Industries	8	46	1225000	10200000	199500	24000000	560,000,000
7	Electrical Industries.	4	81	1'470'000	16017500	280000	21550000	675000000
8	Engineering Industries	9	70	1473200	39350000	290000	56500000	1555000000
9	Chemical industries	13	79	1537000	39269000	0	55110000	2400000000
10	Plastics Industries	5	63	1046000	8951466	411000	13786000	4075840000
11	Crafts and Industrial Services	76	226	6475000	26844400	170000	36192500	242500000
12	Brickmaking	192	8,720	150322500	406800000	80275000	1034000000	214650000000
13	Manufacture of furniture	40	396	7597400	86859000	3725000	105180000	203497000000
14	Gas industry and packaging	4	37	743000	3030000	165000	3596000	6300000000
15	Industry and packaging of RO water	24	48	1320000	9882352	0	1801470	118156800
16	Concrete Industries	31	310	6115100	10496000	606500	21683000	215300000000
17	Recycling industry	11	67	1125000	93551250	70000	105875000	176000000
Total		496	11209	573762200	830541888	87232000	6067226600	288734346800

Source: The researcher's work based on the field study and the survey for the period 15/10/2022-1/3/2023.

Analysis of numerical variables of industrial indicators based on the analysis of central tendency (Measures of Central Tendency)

The measures of central tendency to describe a set of data and a numerical description to show the difference between the variables that represent a set of industrial indicators, and central tendency is a set of measures that work to describe the observations[1] by extracting a set of values based on the program (spss), which adopts the same metrics law to determine and describe the central point in the variables to give an integrated numerical description of the variables that have been identified, as well as determining the statistical tendency in the data and grouping around the sum of the central value of each measure separately as shown in Table (2)Agencies .

([1])https://www.sanadkk.com dated 12/2/2023.

Arithmetic mean

It represents all the variables of the units that have been measured on a number, and often uses the arithmetic mean and is the easiest measure used in large variables has shown the values of the arithmetic mean of the indicators of industrial laboratories in the area of Nahrawan and adjacent areas.

Median

It represents the average value of the total values of industrial indicators when arranged ascending or descending.

The mode

It represents the most frequent value among the values of the industrial index itself, and it turns out that there are no repeats except in the number of coefficient and the value of fuel.

Table (2) Values of the Central Tendency measure for Industrial Factories in Nahrawan and Neighboring Areas for 2022.

Industrial indicators:	Arithmetic Mean	Median	- The mode.
Number ofworkers	29,17647059	11	1
Manpower	659,3529412	83	-----
Manpower wages	33750717,65	1537000	-----
Raw materials	48855405,18	16056000	-----
fuel value	5131294	280000	0
Value of output	356895682	24000000	-------
Capital	16984373341	2400000000	4,500,000,000

Source: The researcher's preparation based on Table (1) and the outputs of the SPSS program.

Analysis of evidence using dispersion measures

It represents the degree of scattering or spread of data around its mean or around the median[1] The dispersion is the opposite of the measures of central tendency as the dispersion shows the extent of deviation of values from the mean of all indicator values. The measurements are as shown in Table (3). The results of the dispersion measures were shown based on the variables of the factors of the industry in the Nahrawan sub-district and its vicinity.

Standard deviation

which represents the extent to which the areas of values are extended from

([1]) Kamel Abu Zahir ,Lecture on Measures of Central Tendency and Dispersion , Islamic University,Gaza , Faculty of Arts, Department of Geography ,2020,p. 5.

the data and the extent to which the value of the indicators is scattered in their statistical tables. The deviation is extracted by subtracting the square of each value from the value of the mean. The square of the output values is collected and divided by the number of industries. Then the root of the square value is extracted to obtain the output of the standard deviation of the value from its mean. The greater the value of the standard deviation of the distribution, the greater its dispersion around the average. When the value of the standard deviation is reduced, the value of the vocabulary is less dispersed around the mean of the distribution .

Variation

The average square represents the standard deviation of each value to give a statistical picture that represents the extent of dispersion of the value of the indicators from their arithmetic mean, and the variation in labor wages was clear.

Torsio

It is related to the measures of central tendency, as the evidence of asymmetry of data (mean, median and mode), so the torsion is clear in the event that the values of central tendency diverge, the torsion scale is clear in capital.

Range

It is the difference between the highest value and the lowest value in the values of the industrial indicators of the coefficients in the Nahrawan sub-district and its vicinity, and we note that the range is clear in the values .

Table (3) The values of the dispersion measures of the variables of the industry factors in the Nahrawan sub-district and its vicinity for 2022.

Lowest Value	Maximum Value	Range	Torsion!	Variance	Standard Deviation	Industrial indicators:
1	192	191	3.0571	2147.279412	46.33874633	Number of coefficient
37	8,720	8683	4.0833	4339976.743	2083.261084	Manpower
743000	375250000	374507000	3.3870	9.02117E +15	94979849.67	Manpower wages
3030000	406800000	403770000	3.6387	9.20989E +15	95968166.31	Raw materials
0	80275000	80275000	4.1095	3.75715E +14	19383367.31	fuel value
1801470	4499200000	4497398530	3.8249	1.19879E +18	1094894467	Value of output
118156800	2.1465E +11	2.14532E +11	4.0184	2.63578E +21	51339818354	Capital

Source: Prepared by the researcher based on Table (1) and the outputs of the SPSS program

Coefficient of difference (1)

This coefficient shows us the dispersion of the distribution of industrial laboratories in the region and can be extracted by dividing the standard deviation by the arithmetic mean of the value of the labor index and then multiplying the output by 100 and based on Table (1)

CV = (SD / xbar) * 100

coefficient of difference= (The standard deviation of the workforce / Arithmetic mean) *100

CV=100 X (2083,26/659,35) = 315,96%

The output of the difference coefficient indicates that there is a large dispersion of the distribution of industrial laboratories in the Nahrawan sub-district and its vicinity.

Gypsum Guide – Martin(2)

This guide is used to analyze the spatial distribution of industrial laboratories based on one of the criteria such as the number of workers in industries to determine the type of industrial pattern if it is diverse or specialized depending on the outcome of the analysis. If it is (zero), it is the absolute guide to specialization. If it is (1) or close to it, it is a guide to industrial diversity and based on Table(4) and by the following equation

Diversity guide= $(\Sigma X^2 / \Sigma (X)^2) -1$

Table (4) Indicator of the number of labor force for industrial laboratories in Nahrawan sub-district and adjacent areas for 2022.

Type of industry	Number of employees (x)	(x^2) Number of employees
Brickmaking	8,720	76038400
TheExtractive Industries	640	409600
Manufacture of furniture	396	156816
Concrete Industries	310	96100
Crafts and Industrial Services	226	51076
Pharmaceutical industry	120	14400
Food industry	122	14884
Leather industries.	101	10201
Asphalt Industries	83	6889
Electrical Industries.	81	6561
Chemical Industries	79	6241
The Engineering Industries	70	4900
Recycling industry	67	4489
Plastics Industries	63	3969
Filter and desalination of RO water	48	2304
Insulation Materials Industry	46	2116
Gas industry and packaging	37	1369
Total	11209	76830315

Source: The researcher's work based on the field study and the outputs of Excel DG= 1- (76830315/^{2}(11209)) = 1- (76830315/125641681) =0.39

(1)Mohammed Azhar Saeed Al-Samak and Abbas Ali Al-Tamimi , Foundations of Industrial Geography and Its Applications , Directorate of Books for Printing and Publishing ,Mosul , 1987 , p. 273.
(2)Abdul-Zahra Al-Janabi, Industrial Geography, Dar Al-Sadiq for Printing, Publishing and Distribution , First Edition, 2013 , p. 204.

We note that the result is = 0,39 and is greater than zero and far from one and this is evidence of the existence of simple diversity in industries and this is due to the large number of workers in the brick industry and that most industries began to appear in the region after 2011 and are in the process of growth and diversification, including factories of concrete, chemical, plastics and furniture industries and that this simple diversity is close to the hypothesis that was imposed in the study that there is industrial diversity in the Nahrawan sub-district and its vicinity.

Factories of industrial endemism

We mean industrial settlement is the establishment of a certain industrial activity in a region and its relative importance exceeds the rest of its counterparts in different regions or is the region that occupies more than its relative share in the industry[1]as it depends on the output if the output appears to us (1) or greater than it, the industry is endemic

$$\text{Endemism coefficient} = \frac{\dfrac{\text{The number of manpower (in a specific industry) in Nahrawan district and its adjacent areas}}{\text{The number of manpower (for all industries) in Nahrawan district and the surrounding areas.}}}{\dfrac{\text{The number of manpower (in a specific industry) in Baghdad governorate}}{\text{Number of manpower (for all industries) in Baghdad governorate}}}$$

Source: The researcher's work based on the field study of industrial laboratories and their adjacent areas for the period 15/10/2022-1/3/2023 and the data of the Ministry of Planning , the Central Bureau of Statistics, the Department of Industrial Statistics, the statistics of large, medium and small industrial establishments for the portfolio of Baghdad, the unpublished data,2022.

If the result is (.) The industry is not endemic as the coefficient of endemism can be defined by the equation [2]

(1) Subhi Ahmed Al-Dulaimi , Geography of Industry from a Contemporary Perspective, Dar Amjad for Publishing and Printing, First Edition 2018,p.

(2) Muhammad Azhar al-Samak , Geography of Industry with a Contemporary Perspective, Al-Yazuri Press, 2008,p. 67.

Number of manpower (in a specific industry) in Nahrawan sub-district and adjacent areas

A/CONF.157/24 (Part I), chap. I, resolution 1, annex II.

Number of manpower (for all industries) in Nahrawan sub-district and adjacent areas

Localization coefficient =

Number of manpower (specific industry) in Baghdad Governorate

A/CONF.157/24 (Part I), chap. I, resolution 1, annex II.

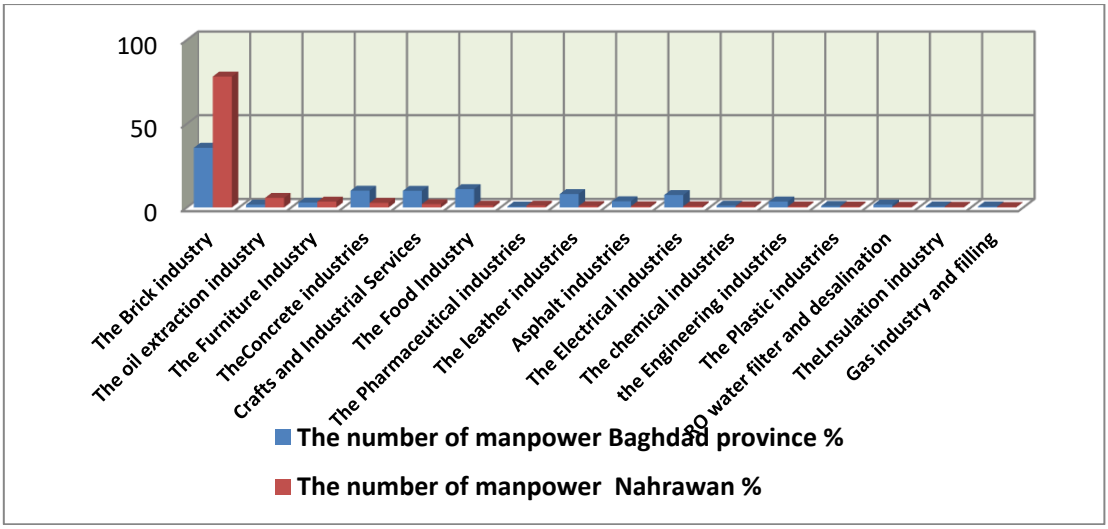
Based on Table (5), which shows the number of workers in the industries for each of the Nahrawan region and its neighboring areas with the number of workers in the same industries for Baghdad Governorate, and when noting Table(6), the number of endemic industries reached (8) industries, and this number indicates that

Half of the industries are localized, the highest of which was the localization of the extractive industries, represented by the eastern field of southern Baghdad, followed by the brick industry and then the pharmaceutical industries

Table (5) The number of labor and their proportions for the industrial laboratories for each of the Nahrawan sub-district and its neighboring areas and the province of Baghdad for the year 2022.

BAGHDAD GOVERNORATE		**Labor force in Nahrawan sub-district and adjacent areas**		**Type of industry**
%	Number of manpower	%	Number of manpower	
35.7 _	13295	78.3	8,720	Brickmaking
1.7	640	5.7	640	TheExtractive Industries
3,0	1102	3.6	396	Manufacture of furniture
10.1	3752	2.8	310	Concrete Industries
10.0	3709	2.0	226	Crafts and Industrial Services
11.0	4095	1.1	122	Food industry
0.6	224	1.1	120	Pharmaceutical industry
8.0	2998	0.9	101	Leather industries.
3.8	1400	0.7	83	Asphalt Industries
7.5	2793	0.7	81	Electrical Industries.
1.1	417	0.7	79	Chemical Industries
3.6	1329	0.6	70	Engineering industry
0.9	342	0.6	63	Plastics Industries
1.8	660	0.4	48	RO Water Filter & Desalination
0.7	252	0.4	46	Insulation Materials Industry
0.6	237	0.3	37	Gas industry and packaging
100	37245	100	11142	Total

Source: Field study of industrial laboratories in Nahrawan sub-district and adjacent areas for the period 15/10/2022-1/3/2023.



Figure(1) Percentages of labor force for industrial laboratories for each of the Nahrawan sub-district and adjacent areas and the province of Baghdad for the year 2022.

Source : The researcher's work based on table(4)

Table (6) Settlement coefficient according to the index of the number of workers in industrial laboratories in Nahrawan and its vicinity for 2022.

Type of industry	coefficient of endemism	Status of settlement
extractive industries	3	Endemic
Brickmaking	2	Endemic
Pharmaceutical industry	2	Endemic
Manufacture of furniture	1	Endemic
Chemical Industries	1	Endemic
Plastics Industries	1	Endemic
Insulation Materials Industry	1	Endemic
Gas industry and packaging	1	Endemic
Concrete Industries	0	Non-endemic
RO Water Filter & Desalination	0	Non-endemic
Crafts and Industrial Services	0	Non-endemic
Asphalt industries (Pet. Eng.)	0	Non-endemic
Engineering Industries	0	Non-endemic
Leather industries.	0	Non-endemic
Food industry	0	Non-endemic
Electrical Industries.	0	Non-endemic

Source: The researcher's work based on table (4) and Excel outputs.

Industrial specialization coefficient

The specialization coefficient indicates the extent of specialization for the Nahrawan area and its adjacent areas with the type of industry that is more specialized by comparing it with the industry itself in the province of Baghdad , and the industrial specialization equation as explained[1].

([1])Mahmoud Hassan Al-Mashhadani , Fundamentals of Statistical Statistics, Asaad Press, 2nd Edition, Baghdad, 1975 ,p. 95.

$$1/100\left(\frac{\text{The Number of manpower (in a specific industry) for the region}}{\text{The Number of manpower (for all industries) for the region}}-\frac{\text{The Number of manpower (in a specific industry) in Baghdad}}{\text{The Number of manpower (for all industries) in Baghdad}}\right)$$

If the result of the equation (zero) means that the region is not specialized in that industry and if (1) means that the region is specialized in that industry .After extracting the results as shown in Table (7), the values indicate that all industries in the Nahrawan sub-district are not specialized , and we note that there are industries close to specialization, including brick industry factories, where the percentage of workers reached (78.3%) of the total number of workers in the rest of the industries, followed by extractive industries. It is possible to explain the decline in the number of labor in some industries due to technical progress in some industries, as well as the seasonality of some industries, such as brick industry factories, where the number of labor is high in the summer and low in the winter. Another reason for the decline in the number of workers in the industry and its specialization is the invasion of markets with imported goods that compete with local industries, which contributed to the cessation of many industries.

Table (7) Specialization coefficient according to the index of the number of workers in industrial laboratories in Nahrawan and its vicinity for 2022.

Type of industry	Specialization coefficient	Specialism Field
Brickmaking	*-0,00426	Non-specialized
Food industry	0,00099	Non-specialized
Crafts and Industrial Services	0,00079	Non-specialized
Concrete Industries	0,00073	Non-specialized
Leather industries.	0,00071	Non-specialized
Electrical Industries.	0,00068	Non-specialized
TheExtractive Industries	-0,00040	Non-specialized
The Asphalt Industries	0,00030	Non-specialized
The Engineering Industries	0,00029	Non-specialized
Filter and desalination of RO water	0,00013	Non-specialized
Manufacture of furniture	-0,00006	Non-specialized
Pharmaceutical industry	0,00005	Non-specialized
Chemical Industries	0,00004	Non-specialized
Plastic industries	0,00004	Non-specialized
Gas industry and packaging	0,00003	Non-specialized
Insulation Materials Industry	0,00003	Non-specialized

Source: The researcher's work based on table (5) and Excel outputs.

*The presence of the negative signal in the table due to the high percentage of the labor force in the Nahrawan sub-district and its vicinity compared to the percentage of labor in the same industries of Baghdad Governorate as noted in Table (6) .

Analysis of the correlation coefficient (PersoN)

The correlation coefficient (PersoN) is used to determine the relationship between the factors of the industry and to find out if one of the variables changes up or down and the extent of the impact of this change on the rest of the factors. Whether the relationship between the positive factors is smaller and its significance is smaller than one, but if negative, it is a negative inverse relationship with its two states (weak or strong). If it is zero, there is no relationship, but if it is equal to one, it is a constant positive relationship [1]. Based on table (1), the spss program shows us the results of the matrix relationship between the factors of the industry as shown in table(8)

Table(8) Pearson correlation coefficient matrix for industrial laboratories indicators in the Nahran sub-district and its adjacent areas for 2022.

Production value in	Fuel value	Raw material value	Labor Wages	Preparing The workforce	Preparation The Coefficient	Variants
0.05 Very weak	0.91 Engagement Very strong	0.89 Engagement Very strong	0.20 Very weak	0.91 Engagement Very strong	1	Preparation The Coefficient
0.22 weak	1	0.96 Engagement Very strong	0.37 weak	1	0.91 Engagement Very strong	Preparing The workforce
0.99 Engagement Very strong	0.31 weak	0.29 weak	1	0.37 weak	0.20 Very weak	Labor Wages
0.15 Very weak	0.97 Engagement Very strong	1	0.29 weak	1	0.89 Engagement Very strong	Raw material value
1	0.15 Very weak	0.15 Very weak	0.99 Engagement Very strong	0.22 weak	0.05 Very weakó	Production value
0.16 Very weak	1	0.96 Engagement Very strong	0.31 weak	0.99 Engagement Very strong	0.91 Engagement Very strong	Capital

Source: The researcher's work based on Table(1) and the outputs of the program (spss).

The table shows that the values of the correlation relationship between the variables (number of coefficients, number of labor, value of fuel, value of production and capital) are different as follows :

1- The dependent variable (number of coefficients) is associated with independent variables with a strong direct correlation with both labor, raw materials and fuel, and we note its weak correlation with the number of workers and the value of production .

2- The dependent variable (the number of labor), we note that it has a very strong direct correlation with the variable, the number of laboratories and the value of raw materials, and we note that its direct correlation is weak with wages and the value of production due to the low wages in the industrial laboratories of Nahrawan and its neighboring areas.

3- The dependent variable (labor wages) We note that it has a single direct correlation

1 Lehman Ann (2005).Jmp For Baisc Univariate and Multivariate Statistics: AStep-by-StepGary.NC: SAS press p.123.ISBN 978-1-59047-576-8.

with the variable production value. Increasing wages increases the value of production while we note its correlation with the rest of the variables is weak .

4- The dependent variable (the value of raw materials) We note that it has a very strong direct correlation with the number of industrial laboratories and the value of raw materials, as the greater the amount of raw materials entering the industry requires an increase in the amount of fuel to operate industrial laboratories.

5- The dependent variable (the value of production) has a strong direct correlation with the wages of labor, while its direct correlation is weak with the value of raw materials and the value of fuel. This is due to the fact that most industries consider the value of their raw materials to be of low value, such as (the brick industry coefficient, as the raw material is dirt and sand is sold at a cheap price, while the asphalt and concrete industries have homemade raw materials) .

6- The dependent variable (the value of capital) and we note that it has a strong correlation with the number of factories and labor. Increasing the number of labor increases savings and increases with it the provision of capital that increases opportunities for expansion and growth of industries.

The number of strong positive correlations (direct) has a language of (12) points is a good indicator of the acceptance of the hypothesis that there is a relationship between the industrial factors, and we note that there is no zero variable to reject the hypothesis, even if there are weak direct relationships, which reached (8) points, but did not approach zero to reject the hypothesis, and on the basis of which the hypothesis is zero rejected and we accept the alternative, which is to accept it.

A strategic analysis (SWOT) for industrial laboratories in Nahrawan sub-district and adjacent areas

The SWOT method is defined as a method that includes the analysis of internal factors represented by strength and weakness and external factors represented by opportunities and threats[1] (). SWOT analytical is one of the strategic methods that analyse the factors of success of industrial laboratories and increase their growth, as well as the expansion of the industrial process in the Nahrawan sub-district and its neighboring areas by monitoring the strengths(S) as a positive anchor that helped the emergence of industry in the region and the development of these points. The method stands for the internal weaknesses(W) as a negative factor to It is reformed, evaluated and reduced through specific treatments after being evaluated and the extent of its impact on the industrial process. This method works to search for opportunities (O)that come from abroad, which is a positive factor in order to be invested and expand the industrial process through it, as well as monitoring threats (T)that can come from abroad that target the industrial process and cause industry disruption in industrial laboratories in Nahrawan and its vicinity to be avoided and we can inventory (strengths, weaknesses, opportunities and threats). We can apply SWOT analysis to the study area in Nahrawan and its vicinity to show the strengths of industrial laboratories To be developed and

([1]) Certo,G and A.Peter ,"Management Concepts and Application" : 2.nd.ed,MC Graw-Hill,Inc. ,New York, 1991,PP88.

invested and to identify weaknesses and external threats to be reduced and provide conditions to get rid of them to be ready for the success of industries in the Nahrawan sub-district and its neighboring areas

First - Strengths: If we note in Table(9) that the strengths have reached ten points, the most important of which is the location between three governorates(Baghdad – Diyala – Wasit) and the extension of transport routes from Nahrawan to the three governorates, this encourages the expansion of industries and the presence of many electricity distribution stations that are distributed in the Nahrawan sub-district and its adjacent areas, which helps to supply the industrial sector with the necessary electricity, which is one of the infrastructure prepared to support industrial factories in the region , The existence of a professional industrial preparation for boys, which is a resource for the preparation of technical manpower supporting the industrial sector development and development, as well as cheap labor that contributes to reducing production costs, the diversity of sources of raw materials for the most widespread industries such as (brick factories, chemical laboratories, insulation materials, asphalt and recycling plants) based on the soil and oil produced from the field of East Baghdad South and the Ministry of Finance, the presence of water sources, represented by rivers and groundwater, provided that the problem of overflow on the main water network is solved by the owners of farms, and water is one of the most important elements of industrial settlement in the study area, as well as the vast and cheap land owned by the Ministry of Industry and the Ministry of Finance, which contributes to The expansion of industries in the study area and the fertile agricultural land that can be invested in the cultivation of industrial crops as well as security stability and all these points made it an attraction for industries in the Nahrawan sub-district and adjacent areas.

Second - Weaknesses: have been confined to nine points, the most important of which is the continuous electricity outage, which made industries dependent on private generators, which contribute to high production costs due to high fuel prices that are not subsidized. We also note the weariness of roads and the large number of bumps and the lack of paving the roads linking between the industrial factories and the main roads. The failure of water to reach the most factories with the availability of a water source represented by the Tigris River due to overflow on the main water network by the owners of agricultural lands has made it difficult for the factories to obtain water for industrial use, forcing them to rely on saline wells that increase the production cost of water as a result of the filtering and desalination process.

III- Opportunities: We note from Table(9) that Friday of opportunities has eleven points for the development of industries and the increase of industrial plants in the Nahrawan sub-district, as it enables the vast and cheap land and the distance from the center of Baghdad Governorate and the south-east field of Baghdad for oil extraction, the establishment of a petrochemical industries factory, as well as the success of productive engineering industries, which increase industrial interdependence and achieve industrial abundance in the Nahrawan sub-district and its vicinity. The agricultural land provides an opportunity to invest in industrial crops,which leads to the opportunity to the establishment of an industrial bank, which helps to increase the establishment of industrial factories by saving capital and increasing savings resulting

from profits for industrialists .Providing contracts between ministries and industrial laboratories in order to operate the discontinued industrial factories.

Fourth - Threats : We note from Table(9) that the threats have collected (5) points, the most important of which is the abundance of imported products in the market that compete with local products, which was helped by the high prices of raw materials and the absence of a law protecting local products and the lack of industrial factories in the Nahrawan sub-district and its vicinity on their share ofelectricity from generating plants, which caused interruption for long hours, which made the factories dependent on private generators.

Table (9 SWOT matrix for industrial laboratories in Al-Nahrawan sub-district and its vicinity

I. Strengths	**II. Weaknesses**
1- The location of Al-Nahrawan sub-district in the outskirts of Baghdad governorate, which helped attract polluting industries (bricks, leather and chemicals) to it. 2- The geographical location of Al-Nahrawan sub-district between three governorates (Baghdad – Wasit – Diyala) and its association with these governorates by transport routes (cars) . 3- There are a number of eight electricity distribution stations with different capacities 4- The existence of cheap labor that contributes to the decline in the value of production. 5- The existence of Nahrawan Industrial Vocational Preparatory, which has a number of industrial vocational specializations and a group of middle and middle primary schools. 6- The presence of sources of raw materials, dust quarries, East Baghdad southern field and sanitary landfill. 7- The existence of water sources such as the Tigris and Diyala rivers and associated water projects, as well as a number of wells characterized by low salt rates suitable for industrial production and the presence of seven water filtering stations. 8- The existence of large and vacant lands owned by the Ministry of Industry and Finance that can be invested in the construction of multiple and different industrial factories. 9- The existence of a modern industrial city equipped with the infrastructure of water, electricity and roads services owned by the Baghdad Investment Authority and dedicated to the construction of modern industrial factories. 10- There is a large agricultural land that can be invested to produce industrial crops such as (corn, sunflower, cotton and other crops) 11- Security stability and the large number of security centers in Nahrawan sub-district helps to stabilize industries in the region .	1- With eight electricity distribution stations in the Nahrawan sub-district and adjacent areas, it suffers from a weak supply of electricity from power plants. 2- Failure to provide facilities in obtaining an industrial license from the Director of Industrial Development in Nahrawan . 3- Wear and dilution of transport routes in the Nahrawan sub-district and its vicinity and confined to the roads of transporting vehicles and lack of diversity such as railways . 4- The absence of industrial banks to provide industrial capital or loans to develop and expand industries. 5- Lack of technical and skilled manpower and the inability to develop and train manpower through institutes and training institutions because they raise production costs and do not invest the educated human energies with scientific expertise. 6- The existence of a number of factories that depend on old production machines or manual production, which is characterized by slowness and lack. 7- Industries rely on imported industrial raw materials and do not provide facilities for importing them or stop factories that produce raw materials. 8- Frequent excesses on the network of raw water pipes that feed water stations by villages and farmers, causing weak water supplies. 9- The lack of fuel price support and the lack of processing of factories with various types of fuel, which leads to the tendency to buy fuel from the black market.
Total Strengths (11)	**Total Weaknesses (9)**

Continued in Table (9)

III. Opportunities	IV. Threats Treats
1- The establishment of a petrochemical industries laboratory for the presence of the field east of Baghdad south, which provides the raw material of oil . 2- Developing industries by providing modern machines that accelerate and increase the production process to provide the market needs of local products 3- Expansion of production engineering industries that provide productive machines for laboratories and increase industrial interdependence to achieve economic abundance. 4- Expanding the cultivation of industrial crops to provide the vast agricultural land and irrigation projects associated with the Diyala River and the Tigris River to give way to agricultural investors. 5- Expanding the industrial departments in Nahrawan Industrial Vocational Preparatory and establishing an industrial technical institute to increase industrial competencies and technical manpower. 6- The establishment of a gas power plant for the possibility of investing burning gas in the East Baghdad South field. 7- The establishment of a railway linked with the national railway network to transport industrial products to the rest of the provinces and facilitate the transfer of raw materials to industrial factories in the Nahrawan sub-district and neighboring areas. 8- Due to the existence of many industries and vast industrial lands, an industrial bank can be established to provide capital and loans for the establishment of various industries as well as providing savings accounts (current and fixed). 9- Encourage the Ministries of Defense and Interior to sign contracts with the Military Industries Laboratory to operate the factory . 10- Planting a green belt surrounding the contaminated industrial area and completing the industrial water filtering project in the leather factory complex.	1- Strong competition for imported products and the lack of any protection for the local product, whether for production or consumer engineering industries. 2- The instability of the price of foreign currency leads to high prices of raw materials and the impact on the local currency. 3- Lack of encouragement for investors and investment in the industrial sector through the development of a law to support foreign and domestic investors as well as the development of a law to protect the local product. 4- Lack of support for the recycling industry, which in turn preserves the risk of high waste by facilitating the granting of industrial leaves that facilitate access to loans and other advantages provided by industrial leave. 5- Electricity outages for long hours as well as water cuts from the liquid network lead to high production costs.
Total Opportunity Score (10)	Threat Score (5)

Conclusions

It can be concluded that the industrial factories in the Nahrawan sub-district enjoy a large dispersion in the distribution of workforce in the industries, and this is evidenced by the diversity of industries in the extent of their absorption of hands, as has been proven due to the emergence of different industries in recent times due to the low price of land and labor wages. Half of the types of these industries have been endemic to the region for the same reason, in addition to the availability of raw materials, as in the extractive and brick industries, as they appeared to be one of the most indicators of the industry's existence that are directly linked, which encouraged the factors available in the study area to the survival and growth of the industry as a source of strength external opportunities that help the industry .

Recommendations

1- Encouraging the increase of industry factors such as capital, fuel, energy and skilled labor.
2- Reform and development of transport routes, which helps the flexibility of transporting raw materials and products.
3- Enact laws that protect local products and encourage local and non-Iraqi investors to invest in the region.
4- Providing important infrastructure for the establishment of industry (water, electricity and transport routes).

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