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Analysis of Locational and Economic Advantages of Economic Activities in Industrial Cities: A Case of Al-Hassan Industrial Estate (HIE)

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ABSTRACT
Objectives: This paper identifies the reasons for selecting the Al-Hassan Industrial Estate's site as a location for industrial activity utilizing the descriptive-analytical approach to provide a clear picture of the locational advantages, i.e. geographical and environmental factors that enhance the localization of economic activities in industrial cities compared to other locations.
Methods: Methodology involves using quantitative methods percentages, means, and standard deviations. An item-based questionnaire, used as research tool, was prepared and distributed to owners of the related industrial corporations to attain the locational and economic characteristics of economic activity.
Results: The results validated that the industries in Al-Hassan Industrial Estate (HIE) adopted a flexible production system approach (FPSA) characterized by small factory sizes, flexibility of the production process, manufacturing technology and production diversity. Also, the results indicate that a group of important factors were behind the selection of the site of Al-Hassan Industrial Estate as a location for economic activity, namely: infrastructure at 67.5%, experience and skill at 57.5%, and the international agreements at 50% in the last place.
Conclusions: That said, among the key recommendations are the necessity of amending the laws and conditions of investment in Al-Hassan Industrial Estate to benefit from opening the trade line with Syria after the end of the Syrian crisis with special privileges for Syrian investors and encouraging vertical and horizontal integration in the industries of Al-Hassan Industrial Estate and between other industrial cities.

KEYWORDS
Economic geography, industry, location, manufacturing, production, technology

1. Introduction

Industrial cities are regarded as the main artery of economic development and a supportive environment for attracting investments in many countries of the world, especially those countries that seek to enhance their manufacturing sector. Of late, various forms of these clusters have become popular, including the cluster, which contains a large group of industrial companies with strong relationships with scientific research centers and vocational training centers with interconnected relationships with planning and industrial decision-makers to produce an industrial output capable of competing locally and globally.

Jordan's interest in industrial clusters began in the early eighties of the last century after the establishment of the first Industrial Estate in Sahab in 1980 in Amman city. Later, in 1986, a decision is rendered to establish Al-Hassan Industrial Estate in Irbid city, which was implemented in 1991, in the belief of the Jordanian government that such a strategy "industrial cluster" would be a major supporter of regional development and create balanced development. Therefore, the Jordanian government's interest in the industrial clusters is still on the rise in the Middle Eastern countries in general and Jordan in particular.

Of note, exploring the locational and economic advantages that industrial cities provide for economic activities is a key research area work that still needs much research work. These

advantages contribute to enhancing economic development as they are major points of attraction for economic activities due to the advanced infrastructure and integrated logistics services they provide, making industrial cities an ideal environment for economic activities. With that, the remainder of the paper is structured as follows: Section two provides an overview of the literature review. Section three presents the research problem, while section four shows the theoretical framework. Research significance is given in section five. Section six presents a review of the methodology adopted in this paper. Section seven provides discussion and analysis. Subsequently, section nine makes concluding remarks, while section ten provides recommendations.

2. Literature Review

Research has documented the significance of the locational and economic advantages of economic activities in industrial cities. In a study using 2007 data in Iraq, Abdullah (2007) identified the applied aspect represented by the Iraqi economy to measure the productive interdependencies between the regions, following the theoretical aspect and considering each governorate in the country as a study region. The methodology involved using the deductive approach considering the theories that analyzed regional disparity, the inductive approach in following these theories on the ground within the applied aspect, and statistical methods, i.e. means, standard deviations, and Williamson Method. The results conclude that regional disparity is the rule, and its existence is implicit and the aim of studying it is to reduce its severity. The results also proved a problem by measuring the calculated indicators for the country's governorates from the overall mean. It is also shown that the value of the (Gini) coefficient (37) indicates the presence of regional disparity that increases as the value of the factor approaches (1).

In another study conducted in Palestine, Al-Qudrah (2007) examined impact of investment in industrial cities on providing job opportunities and the obstacles facing investors in industrial cities. The findings showed the weakness of incentives provided to investors, whether in the pre-investment or post-investment phase, the lack of benefits and rights provided to workers, investors' dissatisfaction with the administrative performance of institutions related to investment in the Gaza Industrial Estate, and the preference of the majority of investors to link granting tax exemptions to the combination of the size of capital and the number of workers. The results proved the inadequacy and inactivity of legislation, laws and financing policies that attract investment, the lack of political and security stability, and the high costs of investment and operation, affecting the ability of the Gaza Industrial Estate to provide job opportunities. As a result of these constraints, the employment growth rate declined by approximately 38% from (1999) to (2007).

Conducting a study in Chinese regions, Peter & Joon (2009) characterized the location decision of South Korean multinationals across Chinese regions. The quantitative-analytical approach and statistical method are used to study the desired objectives. The results confirmed that industries are clustered along national lines, with forward and backward linkages affecting these lines from beginning to end. The results confirm that the presence of South Korean affiliates along an industry line increases the likelihood that South Korean multinationals will invest in each region. However, the linkages do not differentiate by nationality. As such, the analysis of investor location selection combines the perspectives of linkages and clustering along national lines.

In an Egyptian study by Al-Jawhari and Al-Jawhari (2022) assessed the environmental impact of industrial areas in new cities "10th of Ramadan City", addressing the different environmental assessment methods and the dimension index for evaluating industrial areas in cities. The results found the positives and negatives of new cities in the Arab Republic of Egypt and recommended taking advantage of the positives and avoiding the negatives.

From a different lens, Manika, Karalidis, and Gospodini (2022) analyzed the spatial patterns of economic activities through a combination of economic geography theories and spatial analysis methods and identified urban areas that are resilient in times of difficult crises. The results validated that cities characterized by the ability through the proposed analysis and methodological framework can control and evaluate their economic profile and prospects and transform

into smart cities by adopting customized urban renaissance policies and flexible policies.

Moreover, Swinney and Vera (2023) examined how the concentration of firms and workers in urban areas known as agglomerations affects economic performance. The results show that agglomerations lead to increased productivity for both firms and workers as shown by empirical studies. The findings also showed how the benefits of agglomerations vary across different economic sectors and their impact on productivity.

In world-based study, Maket, Kanó, and Vas (2024) presented the evolution of urban agglomerations from (2000) to (2020) in 66 developing and developed economies from Asia, Europe, and Sub-Saharan Africa (SSA) in how urban agglomeration changes affect changes in economic performance. The aim is to overcome the limitations of the empirical literature by constructing a more accurate measure of urban agglomeration using the Herfindahl-Hirschman Index (HHI) calculation that captures the urban demographic structure of countries more robustly than existing indices in the literature. The results showed that urban agglomeration has declined on average across the world's economies, contrary to the prevailing assumption over the past two decades. Empirically, the results indicated a significant detrimental effect of urban agglomeration on economic performance in developing economies i.e. Sub-Saharan Africa and Asia and a beneficial effect in advanced economies i.e. Europe in the short run. With this detailed literature review, the research problem is furnished in the subsequent section.

3. Research Problem

Al-Hassan Industrial Estate (HIE) has witnessed an increase in the number of factories since its inception to the present time, as the total number of companies within Al-Hassan Industrial Estate reached (133) companies by the end of 2025, including (133) operating companies with an investment volume of approximately (430) million dinars. With these soaring numbers, it provided (31489) job opportunities (Jordan Industrial Estates Company, 2025).

These increases are evidence of the efforts aimed at networking with various economic sectors in the public and private sectors to serve the investment process and create the ideal environment to attract industrial investments. This study explores the locational and economic advantages that make Al-Hassan Industrial Estate an ideal environment for economic activities that support raising the economy of Irbid Governorate, where it belongs geographically.

Of note, since Irbid as a province has become more important at the present time due to the scientific and technological development that has led to an increase in the volume and type of consumption and services produced, and the emergence of sectors supporting the agricultural sector in the province. Accordingly, the research problem is mirrored in identifying the reasons for selecting the site of Al-Hassan Industrial Estate as a site for industrial activity.

4. Research Significance

This research significance is reflected in the scope of the paper as it proves that the phenomenon of industrial clusters and industrial cities has become a tool for enhancing economic development and a major driver of economic growth through the expansion of industrial and commercial sectors. The significance of the paper also lies in demonstrating the major role of the industrial clusters and industrial cities in urging technology transfer, research and development and creating new markets that serve internal and external consumers. Moreover, this study is of high significance, as it sheds light on the efforts of the industrial clusters and industrial cities in helping to understand how to optimally exploit industrial potential to achieve sustainable development.

5. Theoretical Framework

Until the end of the twenties of the 20th-century, localization was defined by traditionalists as the establishment of a project or a person working in isolation from others in determining the best location for his activity under certain assumptions such as the availability of full competition in the market with the stability of other variables (Al-Saffar, 1980). Localization is also defined as the establishment of an industry in a region

and its relative importance exceeding that of its counterparts in other regions (Weber, 1969).

The decision to select an industrial site is an important and difficult decision at the same time for several important reasons, such as the huge size of financial investments employed in newly established factories. This decision may be linked to long-term strategies that greatly affect the future and success of the company. Among these strategies are the decision to prepare raw materials, storage, and marketing. The decision to select is not made all at once, but rather goes through several priorities, starting with selecting the country, then the region, and finally the area, where each of these variables differs in importance according to the type of industry desired (Karajewski, Ritzman, & Malhotjra, 2007).

More notably, the decision of industrial location has received the attention of geographers for a long time, represented by the efforts of Marshall (1890) who addressed the economies of agglomeration and internal and external economies of scale, followed by Weber's efforts (1969) in explaining the traditional industrial location. Also, Porter (1991) indicated the horizontal and vertical connections achieved through these clusters. The benefits that the producer gains from land location are of two types: its proximity or distance from the market and its proximity from the raw material.

The optimum location for industry is the one where profit is maximized, and transportation costs are minimized. For land use within cities, transportation costs are the only factor that matters from a spatial point of view. However, there are other cases where transportation costs do not play as important a role as the trade-off between locations, which is based on a comparison of production costs (Hoover, 1963).

Many scientists have explained the optimal locations for industrial activities through theories that have been applied to reality. The beginning was with the German Von Thunun (1926) who formulated a theory of agricultural location to explain patterns of agricultural land use and the factors affecting their temporal and spatial variation. The theory of agricultural locations can also be applied to industrial locations, as it contributed effectively to the development of economic thought towards using the spatial element in economic analysis. Therefore, it is suitable as a theoretical framework for analyzing the factors that control industrial location, but this is done by changing the goal (Al-Hadith, 1971).

Moreover, Weber (1969) contributed effectively to the development of the industrial location, as his theory is summarized in the assumption that the cost of production is the main factor that controls the selection of location with the stability of the market size. Within the framework of some hypotheses that he assumed, Weber (1969) clarified the optimal location for the industrial facility based on a few variables such as transportation costs, labor costs, and the forces of agglomeration and dispersion. The American geographer Hoover (1963) also made great efforts in analyzing the locations of industrial activities and developing theoretical frameworks related to industrial location, as he focused on developing the ideas of his predecessors.

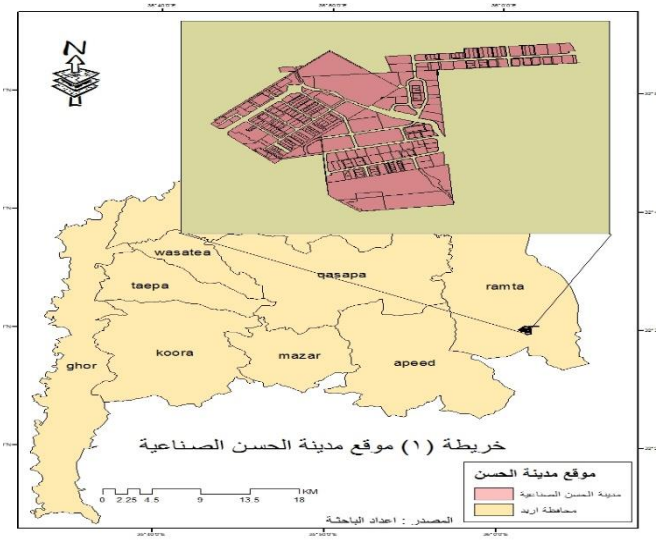
In his book titled The Location of Economic Theory, he discussed a set of theoretical principles and concepts related to location, considering transportation costs and production expenses as the main factors that control the determination of activity (Smith et al., 1971). On the other hand, Hotelling focused on the competition factor as one of the important factors in selecting the industrial location, as competing establishments seek to obtain the largest space in the market area. Therefore, the balance is achieved considering the demand factor, which in turn is affected by transportation costs (Miller, 1990). Finally, Isard Walter's 1956 theory is one of the modern theories in the industrial location decision that played a prominent role in crystallizing many concepts in the field of location. Walter emphasized two issues, which revolve around replacing production elements in alternative locations to achieve optimal utilization, and the other issue is searching for the optimal location that is achieved at the lowest possible cost for the consumer and society at the same time by achieving agglomerations in transportation costs.

5.1 Al-Hassan Industrial Estate (HIE)

Al-Hassan Industrial Estate is the first qualified Industrial Estate and the largest organized industrial cluster in the northern region. Located in Irbid Governorate, 72 km north of the capital Amman, it is close to the northern border crossing, as shown in Figure (1). Al-Hassan Industrial Estate was

established in (1991) on a total area of (1178 dunums) and a developed area of (1005 dunums) with an occupancy rate of about 99% of this land. It is the second project of the Jordan Industrial Estates Company and the second largest city in terms of investment after King Abdullah II bin Al Hussein Estate in Sahab (Jordan Industrial Estates Company, 2025).

Figure 1 Al-Hassan Industrial Estate Location Map Designed by the Researcher



The Jordan Industrial Estates Company was established by Law No. 34 of 1980 as one of the tributaries of the national economy. During its journey that exceeded a quarter of a century, it has achieved effective developmental and strategic performance, as it worked in close coordination with the private sector to promote Jordan as a suitable and distinguished environment for investment. The corporation operates according to the comprehensive concept of industrial cities and modern infrastructure services and the provision of developed lands and industrial buildings ready to serve investors.

The Jordan Industrial Estates Company is in Irbid Governorate and is the largest incubator for industrial investments in the northern governorates. As a result of the increasing demand for investment from various nationalities, the Industrial Estates Company has started the second phase of expansion in the city with an area of 140 dunums due to the current demand for investment in it, as the expansion will include developed lands and new industrial buildings. Such a zone represents an unprecedented opportunity because of its tax-free and duty-free access to the US market, which makes eligible goods more competitive in price. Another incentive for investors in Jordan is the absence of an export ceiling on goods exported to the US (Samara, 2002).

At the level of employees, the workers on the establishment of Al-Hassan Industrial Estate were able to provide all the necessary services for it, such as electricity, internal and external roads, which led to the ease of movement of workers to and from the city. In addition to the existing infrastructure of water and sewage networks and water treatment and purification plants, the city was developed in three stages: the stage of establishing streets, which cover an area of approximately (44%) of the city area, lighting, which cost approximately (2) million dinars, and the stage of connecting electricity, water, telephone and sewage, which cost approximately (1.5) million Jordanian dinars. Concerning the third stage, a wastewater treatment plant was established to dispose of the water produced by factories (Engineering Department, Al-Hassan Industrial Estate, 2005).

5.2 Infrastructure of Al-Hassan Industrial Estate

The infrastructure is free upon establishment, but the institution collects taxes for some services such as sewage and drainage, while electricity, telephone and water are paid through monthly or quarterly bills. The most important infrastructure available in the city is as follows:

Internal Road Network: Al-Hassan Industrial Estate includes a main road with a width of (34 m) and secondary roads with a width of (12 m) with sidewalks and places for loading and unloading, which facilitates movement and prevents congestion within the Industrial Estate. The road network represents 44% of the city's area.

Electricity Network: Al-Hassan Industrial Estate is characterized by high-voltage electricity supply, as there is a main station with (33/11KV), which is fed from the area located in the (Rehab) area with a double line.

Communications Network: Al-Hassan Industrial Estate covers an integrated network of communications that works to provide local and international telephone services, in which flexibility was considered to secure service for all facilities and installations.

Water Network: The Industrial Cities Company has worked to provide the water needs of the industries located in Al-Hassan Industrial Estate, as it supplies factories with water continuously through an internal network of pipes fed from a huge tank with a capacity of 450 m3 with a ground tank with a capacity of 4200 m3, in addition to connecting the city to the water authority network. The city administration also dug an artesian well within the city's perimeter in 1998 and is now exploiting the water in it. The administration also purchased an artesian well adjacent to the city from the residents.

Street Lighting: The planning of Al-Hassan Industrial Estate depended on lighting its streets through lighting poles distributed on all roads with (30 m) between each two poles.

Purification Station: The purification station is in the southeastern part of the city to reduce the negative impacts on the environment and consider the prevailing wind direction, as it allows for water recycling and irrigation of crops and ornamental plants.

Sewerage Network: The city is covered by an integrated sewerage network that works to drain the wastewater coming out of the facility to the purification station established at a cost of 1.5 million Jordanian dinars.

Rainwater Drainage: Two systems were adopted, one surface and the other via underground pipes to prevent water from accumulating and disrupting internal movement.

Facilities, Services, and Agriculture: These facilities included an investor services office, a vocational training center, a labor office, a civil defense center, and a security center, in addition to banks, clearance companies, a fuel station, a post office, a nursery, a health center, restaurants, rest houses, and other public facilities (Engineering Department, Al-Hassan Industrial Estate 2005). Regarding agriculture, about (12%) of the total area of the city was allocated for planting trees and ornamental plants.

6. Method

The descriptive-analytical approach is used to give an insight into the picture of the locational advantages, i.e. geographical and environmental factors that enhance the localization of economic activities in industrial cities compared to other locations. This approach is also utilized, as it is suitable for adding an image of the economic advantages, economies of scale, economies of diversification, economic cost, exchange of knowledge, experience, technology, and innovation. Methodology also involves using quantitative methods, namely: percentages, means, and standard deviations. An item-based questionnaire, used as research instrument, was prepared and distributed to owners of the related industrial corporations to attain the locational and economic characteristics of economic activity.

Primary and secondary data related to the study were collated from several sources such as books, journals, periodicals and related studies to enrich the theoretical literature of the study. Data were also obtained from published and unpublished reports from the Jordanian Chambers of Commerce and Industry, Irbid Chamber of Industry, and Al-Hassan Industrial Estate. Official and unofficial websites were also reviewed, in addition to secondary data obtained from the questionnaire and personal interviews. Additionally, the following key details, i.e. sample size justification, questionnaire validation, and data collection procedures should be included to strengthen the methodological robustness and reproducibility

6.1 Sample Size Justification

According to statistics from the Industrial Cities Company, the total number of companies in Al-Hassan Industrial Estate in 2025 was 150, of which 112 were operational. However, during the field survey, the researchers found that the number of companies operating and included in this study was only 83 companies, and this is the size of the study sample.

6.2 Instrument “Questionnaire” Validity

The questionnaire’s validity was ensured by distributing it to raters with special experience and taking their feedback into account.

6.3 Data Collection Procedures

The data was obtained through a questionnaire distributed to business owners, as well as annual reports from the Industrial Cities Company.

6.4 Terms & Definitions

Qualified Industrial Zones (QIZs): It is any area that has been approved as such by the United States of America. It was also named by local authorities as an area where goods produced

in it are allowed to enter the large US market without customs duties, taxes, terms that achieve mutual benefit, and a maximum limit for quotas or ceilings (Matarid, 2007).

Industrial Agglomeration: It refers to a group of factories in a specific area or city that has location advantages such as transportation routes, population densities and infrastructure services. Also, the dependence is based on the proximity of facilities to each other and the existence of interconnected and economic relationships between them (Kanani, 2008).

Economics of Scope: They are the economic benefits that firms gain when they produce a variety of products or services using the same resources or infrastructure rather than focusing on just one product. These benefits are embodied in the reduction of overall costs through the combined use of resources, such as labor, technology, or distribution network in the production of multiple products (Oliver, 1985).

7. Discussion

In this study, an item-based questionnaire was developed and distributed to the city's factories to obtain the opinions of companies in identifying the reasons for selecting Al-Hassan Industrial Estate as a location for their facilities and economic activity. The questionnaire consisted of the most important factors that make the city an attractive element for establishing projects in it, considering the variables mentioned in the previous important location theories, such as agglomerative clustering works represented by infrastructure, experience and skill, social relations, production specialization, transportation costs, integration, and international agreements in the city. Other than the agglomerations, the production costs and distribution costs related to the single unit were mentioned. The analysis of the results of the questionnaire includes the following:

7.1 Industrial Agglomeration

Regarding the economies of agglomeration "Industrial Agglomeration", they refer to means presence of a group of factories in a specific area or city that has location advantages such as transportation routes, population densities and infrastructure services. Also, the dependence is based on the proximity of the facilities to each other and the existence of interconnected and economic relationships between them (Kanani, 2008). This economic intertwining between them creates what is called economies, which are divided into two types: internal economic agglomerations represented by economies of scale, and the external economic agglomerations (Kanani, 2008).

Concerning the internal agglomerations, it is the relationship between production equipment and factory production. It also includes the returns gained from using the best machines, specialization of individuals and quality in quality, which increases the efficiency of work and thus capital (Kanani, 2008). The existence of internal agglomeration for industry and external for the company includes reducing the output-input unit for the company as it expands in its specific location. This reduction is the result of several neighboring interconnected companies that include localization agglomerations, developing and improving skilled labor agreements, facilitating the exchange of raw materials and products, exploiting industrial waste, and developing specialized services available to all companies (Abdelaal, 2011). Table (1) illustrates the responses of the owners of economic establishments in Al-Hassan Industrial Estate to the extent of benefit from the agglomeration within the Industrial Estate

Table 1 Responses of Owners of Economic Corporations in Al-Hassan Industrial Estate to the Extent of Benefiting from the Agglomerations within the Industrial Estate

Locational Factor in Selecting the Location of the Economic Facility	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Benefits from Infrastructure	54	67.5	20	25	4	5	2	2.5	0	0
Availability of Experience and Skill	46	57.5	20	25	10	12.5	4	5	0	0
Social Relations	21	26.3	35	43.8	19	23.6	4	5	1	1.3
Production Specialization	38	47.5	21	26.3	14	17.5	5	6.3	2	2.5
Reductions in Raw Material Transportation Costs	36	45	19	23.7	16	20	8	10	1	1.3
Reductions in Production Costs within the City	31	38.8	20	25	15	18.7	12	15	2	2.5
Reductions in Distribution Costs	31	38.8	11	13.8	21	26.1	15	18.8	2	2.5
Integration	21	26.3	26	32.5	23	28.8	8	10	2	2.5
Benefits from Industry Incentives in the Location	40	50	27	33.8	6	7.5	6	7.5	1	1.3
The Role of Agreements	40	50	23	28.8	15	18.8	2	2.5	0	0

As illustrated in Table (1), the advantages of the cluster in the study area are as follows:

1. Benefits from Infrastructure

Infrastructure represents the backbone and lifeline of all economic, social and political activities in various societies, as no development or prosperity can be achieved in society

without it. This fact has been confirmed by studies throughout the ages and is supported by the rational realistic vision of what infrastructure services led to in terms of support, integration and linking the components of the economy. Al-Hassan Industrial Estate has equipped the necessary infrastructure of streets, electricity, lighting, and water pumping to make it an investment environment that encourages the establishment of local “Jordanian Level”, Arab, or foreign development projects that contribute to raising the gross domestic product and thus improving Jordan's economic climate.

To clarify the role of infrastructure in selecting a location in Al-Hassan Industrial Estate, investors' opinions on the question related to infrastructure were one of the reasons for selecting the estate for their industries. As shown in Table (1), the percentage of companies that have established themselves in Al-Hassan Industrial Estate in search or request for good infrastructure is (67.5%), which is a very high percentage, while (25%) of the existing companies did not have as their main goal the infrastructure in the city. However, they did not neglect it at all but rather made it one of the priorities.

Moreover, there were (5%) who answered that they were neutral and did not give a reason for accepting or rejecting that their presence in the city was due to the presence of a good and somewhat supported infrastructure. Lastly, only (2.5%) of the city's companies, when deciding to establish themselves in the city, completely neglected the reason for the infrastructure as one of the attractive factors.

2. Availability of Experience and Skill

Contemporary organizations focus on their human resources to demonstrate their expertise, knowledge and skills that contribute to performing their required tasks and achieving economic development plans. Importantly, intellectual capital in the current era is the most dangerous weapon of nations in the battle of progress and advancement.

Therefore, it is necessary to benefit from creative energies and capabilities to exploit available resources and appropriate opportunities (Al-Anzi & Nima, 2002). It is an idea achieved by the economies of agglomeration “Industrial Agglomeration”, as this industry requires the presence in the competition of experience and skill.

Table (1) shows the role of experience and skill as a reason for attracting investment to Al-Hassan Industrial Estate according to the responses of the owners of factories operating in it. Experience and skill were a major and very important reason for selecting Al-Hassan Industrial Estate as the location of the facility for (57.5%) of the factories, while it was an important reason for (25%) of them and to a lesser extent. However, (12.5) of the city's factories responded neutrally that experience and skill played a role in selecting Al-Hassan Industrial Estate as a location for them. Also, only (5%) of factory owners did not show any interest in experience and skill as a reason for selecting Al-Hassan Industrial Estate as an incubator for their facilities, as we find that this percentage is present in the sector.

3. Social Relations

The prevailing spirit in work is not a social spirit, but a material spirit based on material and not on social and emotional participation (Al-Khudair, 2010). However, what is meant by social relations as a tool to attract investment in Al-Hassan Industrial Estate is the process of encouraging investors with the presence of one of their relatives, friends or acquaintances in the city and encouraging them to invest in it for the advantages and profits it enjoys because of his presence there. As displayed in Table (1), the role of social relations in the localization of the facility in Al-Hassan Industrial Estate.

Social relations were not very important in the decision to select the location of industrial facilities in Al-Hassan Industrial Estate, as only (26.3%) of companies took this reason into consideration for their establishment in Al-Hassan Industrial Estate, while (43.8%) of companies considered it a less important reason. Further, (23.6%) of the city's facilities did not take social relations into account as a reason for selecting or not selecting the city as their location. However, when deciding to select Hassan City as a location, (6.3%) of the companies did not take social relations into account in any way.

Of note, the strength of social relations may precede or follow the investment process, as they are sometimes generated after the investment. It is also worth noting that social relations appear more among blue-collar workers “ordinary workers” in

such positions and not among white-collar workers “main investors” who are at a lower level.

4. Production Specialization

Specialization and division of labor lead to increased production, as the individual has a high degree of skill and mastery while performing his task and does not need to move from one task to another, whether inside or outside the production unit. The time required to train one worker to perform several tasks takes a long time compared to training him to work on one specialized task. Also, the division of labor directs everyone to perform his task within his own readiness and scientific or technical qualifications, which enables the factory to obtain the best use of its human resources and encourages the introduction of machinery and the benefit of modern inventions and innovations in the field of production (Amara, 2018).

Al-Hassan Industrial Estate has a high degree of specialization due to the diversity of its industrial sectors due to many advanced industries that require skilled specialized labor, which made it an attractive investment environment for many factories. Table (1) indicates that (47.5%) of the city's factories had production specialization within the city as a major and important reason for establishing them within it. Also, (26.3%) of the city's factories considered production specialization an important reason for the decision to establish a factory inside Al-Hassan, but perhaps not the main one.

Moreover, (17.5%) of the city's factories, when they were established in it, did not regard production specialization as one of the reasons for establishing or not establishing it within the city, so they were neutral in their answer. Additionally, (8.8%) of its factories did not give this feature any importance when they were established in Al-Hassan Industrial Estate. It is also noteworthy that production specialization provides an opportunity for investors to increase competitiveness in production and helps reduce total production costs.

5. Reductions in Raw Material Transportation Costs

Table (1) indicates that the costs of transporting raw materials and their role in localizing industries in Al-Hassan Industrial Estate are one of the most important advantages of industrial clusters. When deciding to establish factories in Al-Hassan Industrial Estate, the reason for reducing the costs of transporting raw materials was a major and important reason for (45%) of them. This reason was also important to (23.7%) of their factories, but it was not the only or the best reason. Moreover, (20%) of the companies were neutral and did not give it importance in accepting or rejecting it, while (10%) of the companies did not agree that it was a reason for selecting the city as their location.

However, (1.3%) of the companies were absolutely against the idea that the reason for their establishment in Al-Hassan Industrial Estate was to reduce the costs of transporting raw materials. According to Pearson's correlation coefficient, the relationship is very weak and inverse. This is also an indication that the raw materials used in the industry, the lower the cost of transporting them to the location of economic activity, as the correlation coefficient is (-0.0018), at a confidence level of (95%) and a degree of error of (5%).

6. Reductions in Production Costs within the City

Table (1) reveals whether the reason for the establishment being in Al-Hassan Industrial Estate is to reduce production costs within the city. However, factories in general did not give this feature of high importance when selecting the location decision. Only (38.8%) of the factories had taken this feature as a basis for selecting the city, while (25%) of them said that it was a good feature and gave it “agree” rating. Moreover, (18.7%) of the factories ignored answering this question and left it neutral. Regarding (17.5%) of the factories, they did not pay attention to this feature and gave it a rating of (15%) disagree and (2.5%) strongly disagree.

7. Reductions in Distribution Costs

Regarding the advantage of reducing distribution costs as one of the reasons for selecting the city as a location for its facilities, Table (1) reveals that factories in general did not give this advantage of high importance when selecting the location, as the answers were very close to the advantage of reducing production costs. For example, only (38.8%) of the factories considered this feature a basic factor in selecting the city, while (13.8%) of them considered it a good feature and gave it “agree” rating. Moreover, (26.1) of the factories ignored answering this question and left it neutral. However,

(21.3%) of factories did not pay attention to this feature and gave it a rating of “disagree” at a rate of (18.8%) and “strongly disagree” at a rate of (2.5%).

8. Integration

The term integration is used in two different approaches in industrial economics. The first relates to an existing organizational situation or structure, where integration relates to the extent to which a single business unit accomplishes successive stages in the preparation and distribution of the product. However, the second is to express administrative behavior, as the term expresses the organization's decision to move to another industrial or distribution stage through vertical integration or by constructing new production or distribution units (Clark, 1995).

Several concepts of vertical integration focus on the idea of the establishment’s efforts to implement more than one production process. Vertical integration is carried out in two methods: Backward vertical integration, which means the establishment moving towards the sources of inputs on one hand. On the other hand, forward vertical integration is the establishment moving forward to market its products itself (Makhool, 2004). Integration often leads to reducing the costs of the production process and controlling the added value more. The facility that takes this path can control prices and profits well, while other facilities that do not have distribution outlets have a low potential for initiative.

Also, the results of the field survey of factory owners in the integration decision as a reason for their residence in Al-Hassan Industrial Estate showed that (26.3%) of the factories strongly agreed, meaning that Al-Hassan Industrial Estate was chosen as the location for the facility to obtain the advantage of integration in the industry. The results showed that (32.5%) of the factories answered in agreement, while (28.8%) of the factories were neutral. (10%) of them said that they did not agree, i.e. they did not live in Al-Hassan Industrial Estate because of the integration advantage. However. (2.5%) strongly rejected this option, i.e. they did not take this reason into account at all when they lived in the city.

9. Benefits from Industry Incentives in the Location

The Industrial Cities Company provides multiple packages from time to time to encourage investment within its industrial cities and achieve a high economic and developmental renaissance. Notably, these incentives target factories located outside the Jordanian industrial cities to encourage them to move to the industrial cities or factories that will be established recently. Therefore, the company explained that because of the growing demand for investment in its cities, it provides the necessary infrastructure services, ready-made industrial buildings and developed lands for industrial investments wishing to invest in the Kingdom.

Moreover, the company also indicated that existing investments in its industrial cities benefited from a set of incentives provided by the company to investors, such as benefiting from the exemptions provided by the Investment Law. The exemptions provided by the investment law include a complete exemption from taxes and fees on assets, developed plots of land, an integrated package of infrastructure services, simplified work procedures through the single investment window, the possibility of leasing or owning land and buildings, easy access to global markets, trained and qualified workers at competitive wages, the implementation of international standards to protect the environment from pollution, the right to own the entire project for the foreign investor, and the freedom to transfer investment returns abroad.

Besides, most industries in Al-Hassan Industrial Estate were established within the city to benefit from the industrial incentives on site. The percentage of factories that took this advantage into account in their decision to establish it and considered it an important matter was (83.3), where this percentage ranged as follows: (50%) “strongly agree” and (33.8%) “agree”. (7.5%) of the companies were neutral in this decision, while (7.5%) rejected that the reason for their residence in Al-Hassan Industrial Estate was to benefit from the industrial incentives on the site. However, (1.3%) completely rejected, which is a very small percentage.

10. The Role of Agreements: Free Trade & Qualified Industrial Zones (QIZs)

One of the most important features of Al-Hassan Industrial Estate is that it is an Industrial Estate with a qualifying

agreement, and a free trade agreement has been added to it. These agreements are among the most important reasons that motivate the investor to establish his facility within the city due to the profitable incentives. The results of the field survey showed that the city enjoys the presence of agreements, which is an important decision for selecting Al-Hassan Industrial Estate as a site for the facility. According to the investors' answers, the reason for selecting the city was (50%) "strongly agree".

Additionally, (28.8%) of them gave it "an agree rating", meaning (28.8%) of the factories considered it a very important reason for their residence in the city, which was the presence of these agreements, and it is a very high percentage. (18.8%) of them answered neutrally, while only (2.5%) of the factories said that they do not agree that the reason for their residence in the city is these agreements. Given the relative importance of all factors combined, the benefits of industrial agglomerations "clusters" were ranked according to the mean of responses of respondents as follows:

Table 2

Industrial Agglomerations "Clusters" According to Rank

Benefits	Mean of Responses %	Rank
Benefits from Infrastructure	%4.55	First
Availability of Experience & Skill	%4.33	Second
Agreements: Free Trade & GIZs	% 4.22	Third
Benefits from Industry Incentives in the Location	% 4.27	Fourth
Production Specialization	% 4.09	Fifth
Reductions in Raw Material Transportation Costs	%3.96	Sixth
Social Relations	%3.89	Seventh
Integration	%3.71	Eighth

As illustrated in Table (2), the most important advantage of the cluster is the "benefits from infrastructure" with a percentage of 4.55%, while the availability of experience and skill is ranked second with a mean rate of 4.33%. Item stipulating "benefits from industry incentives in the location" was ranked third with a value of 4.22%, while the "role of agreements: free trade & qualified industrial zones (QIZs)" is ranked fourth with a percentage of 4.27%. However, "production specialization" is ranked fifth at 4.09%, followed by the "benefits from industry incentives in the location" at 3.96% in the sixth rank. Finally, the importance of both social relations and integration was 3.89% and 3.71% for each.

7.2 The effect of the number of raw materials used in the industries of Al-Hassan Industrial Estate on the selection of location

The effect of the industry's localization near the raw material decreases as the number of raw materials used in the industry increases. One of the most famous examples of the lack of impact of raw materials on localization due to their diversity and abundance is the radio and electrical appliances industry. The raw materials for the manufacture of radios and electrical appliances are many and varied, as most of them are manufactured materials that do not lose any of their weight when transported and are not easily damaged.

In addition, these materials only enter industries in small quantities, so there is no value in developing this industry (Al-Deeb, 2010). Regarding the industries of Al-Hassan Industrial Estate, due to their diversity and multiplicity, the quantities of raw materials entering them vary. Table (3) illustrates those results.

Table 3 Number of Raw Materials Used in the Industries of Al-Hassan Industrial Estate

Number of Raw Materials	Frequency	Percentage
1	5	6.3
2	9	11.3
5-3	29	36.3
8-6	8	10.1
11-9	7	8.8
12 and Above	22	27.2

As presented in Table (3), the number of raw materials used in the industries of Al-Hassan Industrial Estate are thoroughly explained. The percentage of industries that use one raw material is (6.3), which is a very small percentage of factories, while the percentage of factories that use two raw materials for their manufacture is (11.3%). However, factories whose raw materials range between (3-5) represent (36.3%) of the city's factories, while those that use raw materials between (6-8) represent (10.1%). Moreover, factories that use raw materials from (9-11) represent (8.8%). As a final point, more than (12) raw materials represent (27.2).

It is noteworthy that there are extreme industries in which raw materials reach more than 400 and up to 1000, which are the pharmaceutical, medical supplies, chemical and cosmetic industries. Importantly, this great diversity in the number of raw materials is firstly related to the large number of regions from which the raw materials are obtained. The multiplicity of raw materials used in an industry means the multiplicity of their country of origin, which leads to reducing the risks of disruption in production, i.e. the presence of anxiety in a region does not affect production due to the presence of many alternatives.

Secondly, the choice of Al-Hassan Industrial Estate as a location for the facility has nothing to do with the localization of the raw material. Quite the opposite, these industries chose Al-Hassan Industrial Estate as a location to benefit from other incentives such as reducing shipping and distribution costs as well as benefiting from the cluster in general.

Third: The percentage of raw material transportation costs among production costs

The idea of transportation costs has occupied the minds of economic geographers since ancient times, as they addressed the study of the relationship between transportation costs, distance, and the location of the industrial facility. Several studies found that the relationship between transportation costs and distance is an increasing direct relationship (Izard, 1956; Weber, 1969). On the other hand, other related studies (see, Hoover, 1963; Hotelling, 1929), validated that this relationship is a decreasing direct relationship, demonstrating a relationship between the means of transportation, its cost and distance, alongside a strong relationship between the nature of the raw material and the cost of transporting it. The results of the field survey of Al-Hassan Industrial Estate show the importance of the location of industry within the city and its role in reducing transportation costs, as shown in Table (4).

Table 4 The Proportion of Raw Material Transportation Costs among Production Costs

Category	Frequency	Percentage %
% 10-1	36	43.3
%20-11	32	38.5
%30-21	3	3.6
%40-31	2	2.4
%50-41	1	1.2
%60-51	5	6.2
%70-61	2	2.4
%80-71	2	2.4

As seen from Table (4), 43.3% of the factories in Al-Hassan Industrial Estate have a percentage of raw material transportation costs (1-10%), while 38.5% have a percentage of raw material transportation costs (11-20%), which are very high percentages. That is, 81.8% of the city's factories do not exceed 20% of the production costs for raw material transportation. This large percentage is an indicator of the importance of the factory's location in the city to benefit from important agglomerations such as reducing shipping and distribution costs despite the multiplicity of raw materials and the diversity of their sources as mentioned earlier.

Importantly, this large percentage also indicates the decline in the importance of transportation to be replaced by the importance of information and the costs of obtaining it in the modern production system, where it constitutes 70-80% of the value of production. Concerning the remaining factories, the percentage of raw material transportation costs among the total production costs was as follows: (21-30%) 3.6% and (41-50%) 2.4%. Regarding the factories in which the cost of transporting raw materials exceeded 50%, the percentage reached 10.8%, while the percentage of raw materials transporting did not exceed 80% of the production costs in any of the city’s factories.

8. Conclusion

In a nutshell, this paper identified the reasons for selecting the Al-Hassan Industrial Estate’s site as a location for industrial activity utilizing the descriptive-analytical approach to provide a clear picture of the locational advantages, i.e. geographical and environmental factors that enhance the localization of economic activities in industrial cities compared to other locations. This paper is of high significance as key related results are achieved within the analysis and discussion previously done. The results found that the industries in Al-Hassan Industrial Estate adopt a flexible production system approach, which is characterized by small

factory sizes, flexibility of the production process, manufacturing technology and production diversity.

Moreover, the findings demonstrated that the selection of the site of Al-Hassan Industrial Estate as a location for economic activity was due to several significant factors, the most important of which are: infrastructure at 67.5%, experience and skill at 57.5%, and international agreements at 50%. Besides, 81.8% of the factories in Al-Hassan Industrial Estate do not exceed 20% of the production costs for transporting raw materials, as distribution costs did not affect the decision to select the location.

9. Recommendations

Given the previous analysis and discussion, alongside the results attained, the current paper recommends amending the laws and terms of investment in Al-Hassan Industrial Estate to benefit from the opening of the trade line with Syria after the Syrian crisis and with special privileges for Syrian investors. Also, the article recommends encouraging vertical and horizontal integration in the industries of Al-Hassan Industrial Estate as well as between other industrial cities.

With the scope of the research problem and results achieved, the paper recommends paying attention to local backward connections, especially in the field of technological developments and information, to ensure the competitiveness of Jordanian industries in local and foreign markets. Further, the study recommends benefiting from the internal agglomerations achieved by industries in Al-Hassan Industrial Estate to increase opportunities for competition in global markets and thus create global forward links.

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