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**The impact of using the added value from the point of view of freight forwarders and the Inland Freight Station to operate the Egyptian dry ports**

**Mrs. Shimaa Mahmoud Mohamed Abd El Rasoul.**

Seafarers' documents administrator, Landmark marine.

**Dr. Ahmed Abd El Rahman Reda.**

Egypt Shipping accounting manager, MLH Egypt for shipping.

**Dr. Ahmed Ismail Ahmed Hafez.**

Institutional Research Department, Arab Academy for Science, Technology & Maritime Transport.

**ABSTRACT**

Maritime transport industry plays an important role in global trade and economic development. This research reviewed the importance of dry ports to achieve the sustainable development goals and improve Egypt's ranking in the logistics services performance index dry ports. This research aims to define challenges that facing operating of dry ports by linking them to seaports.

This research relied on several statistical methods using the analytical and quantitative approach using a questionnaire to measure the impact of the presence of dry ports through the use of the statistical analysis program SPSS, to demonstrate and amplify hypotheses using individual step regression and multiple step decline of dry ports. It was also verified the result using SWOT analysis to find out the different opinions of stakeholders

to reach the search goals. We found that operation of dry ports is an added value for the maritime transport sector. We recommended harmonization between dry ports and Inland Freight Station.

**Keywords:** Maritime transport industry, Inland Freight Station (IFS), Dry ports.

### أثر استخدام القيمة المضافة من وجهة نظر وكلاء الشحن ومحطة الشحن الداخلية لتشغيل الموانئ الجافة المصرية

#### المستخلص:

تلعب صناعة النقل البحري دورًا مهمًا في التجارة العالمية والتنمية الاقتصادية. استعرضت الدراسة أهمية الموانئ الجافة في تحقيق أهداف التنمية المستدامة وتحسين ترتيب مصر في مؤشر أداء الخدمات اللوجستية للموانئ الجافة. تهدف الدراسة إلى تحديد التحديات التي تواجه تشغيل الموانئ الجافة من خلال ربطها بالموانئ البحرية. اعتمدت الدراسة على عدة طرق إحصائية باستخدام المنهج التحليلي والكمي باستخدام استبيان لقياس أثر وجود الموانئ الجافة من خلال استخدام برنامج التحليل الإحصائي SPSS، لتوضيح الفرضيات وتضخيمها باستخدام الانحدار الخطي الفردي والانحدار متعدد الخطوات. وتم التحقق من النتيجة باستخدام تحليل SWOT لمعرفة الآراء المختلفة لأصحاب المصلحة للوصول إلى أهداف البحث. ووجدنا أن تشغيل الموانئ الجافة يمثل قيمة مضافة لقطاع النقل البحري، كما أوصى البحث بالمواءمة بين الموانئ الجافة ومحطة الشحن الداخلية.

**الكلمات الدالة:** صناعة النقل البحري، محطات الشحن الداخلية، الموانئ الجافة.

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## 1. INTRODUCTION:

Maritime industry is the backbone of global trade and economic development, all commercial and maritime sectors depend on the services and capabilities provided by the shipping sector to facilitate the supply chain cycle from door to door, Therefore, the efficiency of maritime sector services is a major focus in the competitiveness of any economy and its ability to achieve economic growth, and attract foreign investment to the country.

Sea ports play an important role in economic development and increase the national income, as the number of seaport and efficiency of ports and the volume of foreign trade exports and imports have become essential indicators for assessing the country's prosperity, Egypt owns 48 seaports, including 15 commercial ports, in addition to 33 specialized ports to serve various activities along the coasts of the Red Sea, the Mediterranean Sea, the Suez Gulf and the Aqaba Gulf, the establishment of dry ports aims to enhance the capacity of seaports (Maritime Transport Sector, 2021).

The dry port is equipped facilities established on land outside the ports to complete the multimodal transport system, which achieves the logistical concepts, and prevents overcrowding in the seaports also achieve an added value activity needed efficient communication network and subjecting it to customs control (Awad, 2004).

There are a number of inland freight stations whose activities are partially similar to dry ports, such as free zones, customs warehouses or logistics centers. Furthermore, there are some similar classifications and its importance and fundamental difference from the previous Inland Freight Station (IFS), especially since there are a number of customs warehouses already called dry ports which will be clarified in chapter three.

This research clarified the importance of operating dry ports as a major part of the logistics chain and explains models of IFS whether they are customs warehouses, logistics centers, and free zones in the Arab Republic of Egypt.

The research demonstrated the complementary role of seaports with dry ports to achieve the highest competitive advantage by providing logistic services in the lowest cost and the least time. Also, it illustrated the difficulties that dry ports face in legal dependency, ownership aspects classification, difficulty in obtaining licenses, and the similarity of the logistical activities of dry ports with IFS. SWOT analysis to Egyptian dry ports will also be identified. The research discussed. It Presents the dry ports and IFS through their concept, importance, activities, classification, how to manage dry ports and their role in the logistic chain. Also, an integrated vision of the Egyptian seaports and dry ports and the importance of linking them logistically, and how highlight the role of Egyptian dry ports in the supply chain and its impact on seaports, are presented realistic models of IFS operating under the

name of a dry port. In addition to the relationship between dry ports and freight forwarder, means of connection between seaports and means of transport.

One of the components of Egyptian maritime transport is the availability of promising investment opportunities that are represented in the establishment of new seaports, raising the efficiency of the current seaports, developing the Suez Canal, and reconstructing and investing in other ports such as the Mediterranean sea, red sea, and the northwest of the Gulf of Suez, North Sinai, and the northwest coast, to hasten the transformation of Egypt into a global logistics center, by maximizing the role of Egyptian dry ports, to enhance the competitive capabilities of Egyptian seaports to compete with global ports (Rodrigu, 2020).

One of the important factors to achieve a competitive advantage of the seaport is through developing the entire transport system, to improve the process of linking between the dry port and the seaport, especially after the amendment of trade agreements, for example, international and maritime trade terms have shown the importance of having internal links in countries, to deliver the goods from export point to import point in the internal regions of the countries, and the necessity of linking them to the seaports (Haezendonck et al., 2019).

The dry ports also contribute to many benefits, such as facilitating congestion near seaports by changing the mode of

transportation from land transport to rail transport, also providing the shippers with a wide range of logistics services to dry ports, and reducing environmental pollution. The dry port creates job opportunities and development both regionally and commercially (Kurtulus et al., 2019).

## **2. LITREATURE REVIEW:**

Many studies assessed and evaluated dry port; Elzahra et al., (2015) studied how dry ports research is conducted from a different perspective and attempt to summarize the existing research by reviewing the methodologies of previous research and proposing a classification, from 1986 to 2015, collecting research on the concept of dry ports and analyzing the main ports. The results indicated that most of the studies of dry ports were concentrated in the Asian continent, and also suggested more studies for the rest of the world in future research.

Nguyen et al., (2016) studied the multi-Criteria Approach to dry port Location developing and economies with application to Vietnam, where dry port development is often driven by seaport interests, inland terminal planning was developing. The results presented a conceptual framework for the application of multi-criteria analysis to dry port locations in developing countries that take into.

The Economic and Social Commission for Western Asia, United Nations, (2017) studied the logistics performance index in the Arab region, its components, methodology of numbers and levels for Western Asia and (ESCWA) countries according to the

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logistics index using the measurement methodology, found indicated that other indicators should be such as developed to evaluate the results and verify their accuracy.

Lam et al., (2018) studied the relationships between the characteristics of dry ports and remote regional ports through a sample of dry ports globally, by performing a statistical analysis using a large sample of dry ports from all over the world, found the importance of intermodal in developing the dry port system and integrated with sea port.

Purwanto et al. (2019) studied the development of a dry port pattern for logistics transportation options, and this paper examined the preferred behavior of the logistics business of using a dry port with rail transportation.

Used field survey randomly, and proved the tendency of java logistics business representatives to choose road/truck transportation in freight distribution activities, found the opportunity to use trains is still essential.

Jeevan et al., (2019) aims to investigate the impact of dry port operations on container seaport competitiveness. It conducted an empirical study in Malaysia through 120 online surveys to key stakeholders of dry ports, including freight forwarders, shippers, seaports, rail operators, shipping lines, and haulers. The data collected were analyzed using exploratory factor analysis (EFA). The results from EFA show that Malaysian dry port operations have impacts on seaport

competitiveness. These include enhancing seaport performance, increasing service variations for seaports, improving seaport-hinterland proximity, increasing seaport trade volume, and enhancing seaport capacity.

Varese et al., (2020) studied the concept, classification, functions and technological processes of a dry port, and based on analysis and data collection, on the concepts of “common way”, “dry ports” and “inland transportation” or rural shipping as a new type of sea port related hub, but still so more studies are needed.

Ziaakas, (2021) illustrated the dry port location selection criteria and impact assessment. For that purpose, it shed light on the role of large-scale freight facilities, such as dry ports, different cases from three important trade regions (Europe, US, Asia) have been selected and analyzed. The conclusion of that study was oriented in providing a basis for future studies in location selection problems as well as in dry ports and freight villages’ examination.

Wan et al., (2022) analyzed the influence of dry ports construction on seaport growth, a mediation model was used to investigate the mechanism of impact of dry port construction on port city containers. The results showed that the establishment of the dry port greatly enhanced the growth of the container volume of the seaport, which increased by 31.5%. Such an effect depends on the growth of foreign trade, support to the government and port stakeholders, clarifying and influencing the benefits of dry



port construction channels, ultimately promoting port growth and the internal economy.

Jeevan et al., (2022) assessed the marketing approach between seaports and dry ports in Malaysia: current trend and strategy for improvement. This paper aims to explore the comparative analysis of marketing strategies between seaports and dry ports. Second, this paper proposes a recommendation to improve marketing approaches in both aims. Design/methodology. This research analyzes current marketing approaches to improve the freight volume and enhance interrelation between them for comprehensive collaboration in the freight supply chain. The result shows that dry port and seaport practices a mixed marketing strategy. This research employed semi-structured interviews via an e-interview questionnaire.

### ***Gap analysis and contribution:***

From previous studies we did not found any studied that evaluate dry ports through the relationship of value-added effects from the point of view of freight forwarders for the operation of Egyptian dry ports, using a questionnaire for workers in the field; therefore, this research fills this gap statistically using SPSS program.

### **3. RESEARCH PROBLEM:**

Egyptian dry ports couldn't perform their role optimally in light of the competition with IFS especially customs warehouses. Therefore, there is a need to reconcile the situations to find

solutions to the contradictions and agreements between the theory and practice of the Egyptian dry ports.

#### **4. RESEARCH IMPORTANCE:**

Dry ports act as an extension of seaports to facilitate the movement of goods and container handling, improve the efficiency of logistics services and increase the carrying capacity.

This research is of great importance in clarifying the challenges faced by the Egyptian dry ports, their current situation, explaining the difference between logistic centers, customs warehouses, free zones, IFS dry ports with the relationship with freight forwarders, and the impact of activating the Egyptian dry ports on the Egyptian seaports, and the added value on the Egyptian economy.

#### **5. RESEARCH AIMS AND OBJECTIVES**

This research aims to define challenges that facing the activation of the Egyptian dry ports and the impact of the use of value-added services, and the objectives are:

1. Determining the most important obstacles that were faced by the concept of dry ports in Egypt within stakeholders and the strategy of linking them with the Egyptian seaports, in addition to integration with Egyptian seaports.
2. Clarifying the movement of goods in the container ports to compare the maximum capacity and the actual capacity and solve this problem through the Egyptian dry ports.

3. Illustrating the status of the Egyptian dry ports and their relationship to IFS and freight forwarders.

## **6. RESEARCH QUESTIONS:**

- What are obstacles that facing the connection between the dry port and the sea port in the Arab Republic of Egypt until 2022?
- What is the current situation of the dry ports in the Arab Republic of Egypt?
- Do the dry ports in the Arab Republic of Egypt operate according to laws that allow easy licensing procedures?
- What are the problems and difficulties facing the concept of dry ports in the Arab Republic of Egypt within the IFS?

## **7. RESEARCH HYPOTHESIS**

To reach research aims and objectives; this research has three hypotheses

- There is a significant relationship between the customs warehouse and the existing dry port.
- There is a significant relationship between value-added and the existing dry port.
- There is a significant relationship between freight forwarders and the existing dry port.

## **8. RESEARCH METHODOLOGY:**

### **8.1 Research Tools:**

Qualitative questionnaires are used for data collection and quantitative questionnaires are used to collect data to validate a

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previously constructed hypothesis. The questionnaire-is based on the respondents that should be able to read the questions one by one, understand them well before answering.

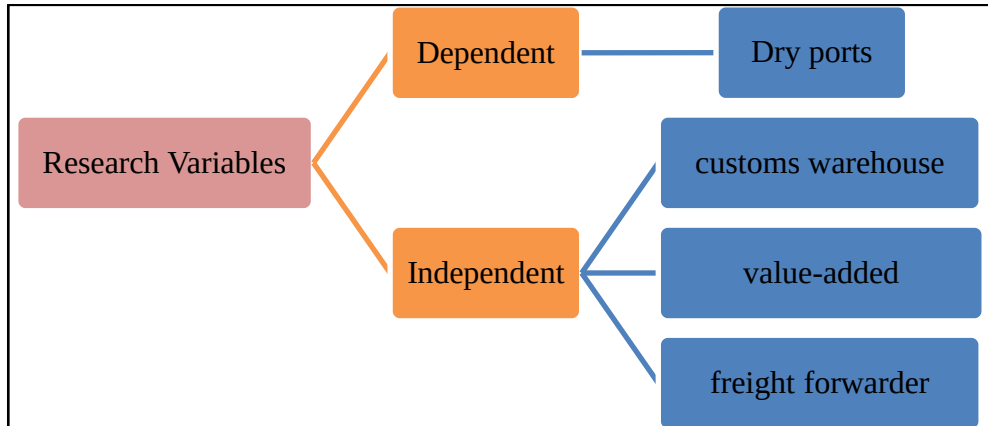
The research methodology depends on descriptive and analytic methods. To achieve the desired goals of the research, the research relied on several statistical and logical methods of the quantitative analytical approach; using a questionnaire to measure the impact of the presence of the dry port throughout put statically analysis of SPSS. Descriptive statistics to the statement of the questionnaire and hypotheses test had been carried out by using single linear regression and multivariate linear regression for the dry port.

Also, verification using SWOT analysis to know the different opinions of the concerned parties to reach the objectives of the research.

This research reviewed the standard of operating the dry port, and its connection with the overcrowding of container handling in Egyptian seaports, and explaining the difference between the logistics centers, customs warehouses, free zones, and the added value of the presence of dry ports and their relationship with freight forwarders to reach the research objectives.

Which depended on the systematic review of previous studies, such as master's and doctoral theses, research papers and books, as well as information available on the internet, which illustrated in the literature review.

## 8.2 Research Variables:



**Figure (1) Research variables.**

**Source:** Abd El Rasoul, 2022.

## 9. CHARACTERISTICS FOR (IFS)

In this section we will review different topics related to research such as logistic centers features; characteristics of logistic centers; the importance of logistic centers for ports; classification of logistics services depending on the evaluation of the elements; the activities of logistic centers; dry ports features; characteristics dry ports; the importance of dry ports; classification of the dry port; the management of dry ports; the role of dry ports in the logistics chain; free zones features; characteristics of free zones; importance of free zones; classification of free zones; activities of free zones in Egypt and finally customs warehouses features. In addition; we will review recent papers concerned with dry ports.

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### **9.1 Logistic centers feature and its characteristics:**

Most of the world's ports tend to attract business, therefore, it is clear to the transport industry that the presence of a logistic center leads to the success of the seaport and its ability to perform activities, which is completely covered by an integrated information system to achieve accelerated performance in the port. And thus, saving time, effort, and money, and achieving the highest benefit from all the investments associated with that business (Bolumole, 2015).

The result is to raise the efficiency and quality of logistic operations, for all stakeholders, which leads to maximizing the added value in the port sector and plays a major role in maintaining the economic growth of ports and achieving the highest rate of profits.

With IFS to attract added-value activities such as re backing storage, and that increase the production value or save money, the logistics center must be equipped with all facilities, including services and activities such as general services, customs procedures, equipment used, and commercial activities, as well as a mechanism for providing value-added services for goods and transport, in order to achieve customer satisfaction (Yavas et al., 2020).

The logistics center achieves also adhere to international standards and quality performance to provide a framework for multimodal transport solutions and sustainable development 2030, will be explaining all the concepts, importance, and

classification of logistics centers, and the difference between customs warehouses, free zones, and dry ports.

There is no unified definition of logistic centers despite the increasing interest by scholars some of whom know them by addressing the activities related to transport and logistics services and others to the job that is carried out in the shipping distract, all definitions are based on the functions performed by the center logistics within the logistics system and the most important of these definitions:

A logistics center is a center located in a specific area through which all activities related to transportation, logistics and distribution of goods, for both national and international transit are carried out by different operators on a commercial basis who can be owners or tenants of buildings and facilities such as warehouses, distribution centers, storage areas, offices, trucks services, etc.), which are built, in order to comply with the rules of free competition, the logistics center must be open to allow access to all companies involved in the activities described previously (Meza-Peralta et al., 2020). Logistic center to facilitate movement of cargo and storage with require value-added activity.

## **9.2 The importance of logistic centers for ports:**

The importance of port logistics centers is that they provide a series of services and activities such as transportation, warehousing and brokerage necessary to transport goods and

establish more supply chains for different services and goods within the required limits with the advantage of less cost (Tyukhtenko et al., 2020).

The performance of logistics services affects productivity in all economic sectors, helping trading, manufacture, and integration, by means of road transport, rail, and inland roads (Halaszovich et al., 2020).

Hence, it is a complex of large-scale logistics services with facilities for accommodating distribution operations in one location that is directly linked to container terminals or because the container industry replaces the small shipment trade with general cargo, and the multimodal transport chain of transit freight, by using the latest information and communication technology, providing storage and shipping places, tracking shipments and packing containers (UNESCAP, 2020).

### **9.3 Classification of logistics services depending on the evaluation of the elements:**

A logistics performance indicator is to measure the quality of the logistics services provided with the countries, and because logistics activities is the main function performed in dry port to compare between IFS and LC, they are indicators that affect the concepts of operating dry ports and have a direct relationship with logistics services in terms of the efficiency of the management of the dry port in the country.



Logistics services are a basis in the modern global economy, and trade analysts, policymakers, and workers in the trade sector need tools to measure the efficiency of logistics services within countries among themselves, and the logistics performance indicator is one of the widely recognized and used indicators by the private sector, governments and international entities as an important tool for measuring Efficiency of countries in logistics, the World Bank and other international organizations are increasingly using the index in trade facilitation activities in developing countries, the index allows stakeholders in the government sector, business, and civil society to assess the competitive advantage, and to understand the importance of different interventions (Rezaei et al., 2018).

**Table (1) Ranking of Egypt and selected countries in the years 2012,2016 and 2018 Logistics Performance Index**

| ESCWA member countries | Logistics performance index 2012 |       | Logistics performance index 2016 |       | Logistics performance index 2018 |       |
|------------------------|----------------------------------|-------|----------------------------------|-------|----------------------------------|-------|
|                        | Rank                             | Total | Rank                             | Total | Rank                             | Total |
| Jordan                 | 5                                | 2.56  | 4                                | 2.96  | 4                                | 2.96  |
| The UAE                | 1                                | 3.78  | 1                                | 3.94  | 1                                | 3.96  |
| Egypt                  | 4                                | 2.98  | 2                                | 3.18  | 3                                | 2.82  |
| Tunisia                | 3                                | 3.17  | 6                                | 2.5   | 5                                | 2.57  |
| Sudan                  | 6                                | 2.10  | 5                                | 2.53  | 6                                | 2.43  |
| Saudi Arabia           | 2                                | 3.18  | 3                                | 3.16  | 2                                | 3.01  |

**Source: World Bank, Logistics Performance Index report, various years, (2021).**

Table (1) discusses the logistic performance index during the years from 2012 to 2018. It is shown that the index is not stable for all countries, in the universal rank UAE is at the top, Egypt is in the middle, Jordan fluctuates, and they are in a state of progress and decline.

By tracking the performance of the sub-pillars in six sub-indicators: efficiency of the clearance process, quality of trade and transportation infrastructure, ease of arranging shipments at competitive prices, efficiency and quality of logistics services, ability to track and trace shipments, time to arrival, and delivery, which means that the mentioned factors have a positive and negative impact on the logistic performance index (Kain et al., 2018).

Hence, when there are problems within the logistics and transportation centers in the country. Its port may lose customers such as large shipping lines, important freight forwarders, and shippers, which may turn to other ports that are more efficient, faster and provide an uninterrupted connection for cargo handling and customs clearance (Ansari et al., 2018).

Thus, providing an appropriate way to reduce congestion and the total cost of import and export to increase the competitiveness of ports, and from here we arrive at the importance of operation Egyptian dry ports, which will support the shortcomings.

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#### **9.4 Logistic centers activities:**

Logistics centers are characterized by a broad concept as a location in which most of the various transportation and logistics activities are carried out, in addition to the distribution of goods, which can be categorized into 4 main factors based on (Yavas et al., 2020) classification. Demonstrated as follow:

1. Activities related to the transportation of goods, storage, stock replacement, and feedback post-shipment, customs clearance, handling customer orders, assembling goods, transportation, and investigation documents.
2. Management activities, vehicle and container operation management, transport fleet management, vehicle repair and maintenance, container and vehicle rental, fuel supply, container cleaning, rest houses, and administrative offices.
3. Value-added activities as well as packaging and assembly in addition to quality control and manufacturing or modification according to customer requests. Moreover, the logistic center performs many activities including insurance and banking services.
4. Competitive advantage for the maritime ports, which will also achieve through ICT and quality increasing, will achieve (Santos, 2020).

Reducing costs, and speeding up customer orders, will make it reach to global goals, and positively affect the general level of the logistic center, which raise it in a distinguished position.

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## **9.5 Dry ports feature; characteristics and its importance:**

By introducing the term or concept of dry port, it is not merely a physical extension of the storage capacity of seaport area, but more importantly that it is a tool by which the dimensions of the port have been amplified for encouraging trade, which is commonly referred to as "Indoor Stations", there are many definitions from different studies to describe dry port, and they are as follows:

Dry ports are the public facility in the depth of the country inside and outside the sea, land, and airports to prevent overcrowding and complete the transportation defined (Awad, 2008).

A “dry port” is a multimodal inland terminal directly connected to a seaport with a high capacity for traffic conditions, preferably rail, where shippers can efficiently to their final destination (Varesa et al., 2020).

A dry port is defined as an inland environment with cargo handling facilities, allowing the implementation of many functions such as assembly, temporary storage, customs clearance, and transport linkage, allowing private and public enterprises to merge, and facilitating interactions between various stakeholders within the supply chain (Sun et al., 2020).

Dry port can be defined as a facility equipped within the country away from seaports. It is set up to complement the multimodal transport and realize the concepts of logistical activities, helps prevent congestion in sea, land, and airports, and

achieves an added value, with the necessity of having a distinct infrastructure linking it to various modes of transport. And a highly efficient communication network and these areas are subject to customs control (Jeevan et al.,2015)

The dry port establishes an independent department to measure and evaluate the quality of the service it performs and undertakes the design and operation of a continuous program to develop. Also even evaluate their quality by measuring the level of logistical performance as well as evaluating the quality of services provided by the port by measuring the degree of customer satisfaction with the extent of his conviction, satisfaction, and awareness of the quality, the services, and comparative advantages that he may or may not obtain. For dry port users The same quality of services (United Nations, 2020)

The dry port is a direct-connected multimodal indoor terminal In seaports with high-capacity transportation, customers can even select their transshipment units as if they were direct to a seaport.” To meet dry port standards, they must be as follows:

- An inland extension of a seaport, i.e. as an inland frontage of an inland seaport, providing services normally available in a port;
- Connecting it to a seaport through a "high-capacity means of transportation", which is often rail transport and less often barge/inland waterway (Tadić et al.,2020)

From the above, it is clear that there is no unified definition of the dry port that the researchers agreed upon, and there are

very broad definitions of the term dry port, from which we can conclude that it is a customs work center that arises away from the usual customs ports and has a relationship with sea or airports, as it is an inland station with roads Traffic, logistical activities, and a high-quality communication network that reduces congestion in seaports.

**Table (2) Different dry port taxonomies**

| Classification criteria | Types of Dry Ports                | References                    |
|-------------------------|-----------------------------------|-------------------------------|
| Location and functions  | Close, midrange, distant          | Roso et al. (2009)            |
|                         | Seaport-based, city based, border | Beresford et al. (2012)       |
| Development direction   | Outside-in, inside-out            | Wilmsmeier et al. (2011)      |
|                         | Bidirectional                     | Added by Bask et al. (2014)   |
|                         | Land-driven, sea-driven           | Monios (2011)                 |
| Maturity level          | Pre-, start-up, growth phase      | Bask et al. (2014)            |
| Dedication              | Shared (or public), dedicated to  | Ng and Cetin (2012) and       |
|                         | particular enterprises or cargoes | Feng et al(2012)              |
| Geography of operations | Domestic, international           | Do et al. (2011)              |
| Transportation mode     | Rail-based, barge-based           | Rodrigue and Notteboom (2012) |

**Source: Maritime Economics & Logistics, (2020).**

Table (2) shows different definitions and taxonomies. The researcher suggests focusing on further studies on the concepts and taxonomies of "dry ports" or shipping villages as a new type of hub. Connected to the seaports.

We can classify dry ports according to the function they perform, whether governmental, multi-purpose or specialized, each of them serving a specific purpose, the following is the classification of ports based on the job criterion.

- Governmental dry ports: these ports can receive various types of containers and general goods (casting means) and disavow various means of transport (land transport, railways and river transport), and they are managed by the state, serving the state's national and development plans, as it enjoys easy funding and preparation for the various requirements of the state to achieve its plans the strategy for sustainable development 2030
- Industrial dry ports: it specializes in serving a private trade or a specific industry, such as petroleum refining and the export of industrial raw materials, and it must have specialized equipment with high efficiency, for example, a gas liquefaction station for resale for the benefit of the state again
- Dry multi-purpose ports, which are ports that can resign multiple types of goods, including dry and liquid bulk, general goods, livestock, cars of all kinds, heavy transport, and provide services for assembling raw materials, assembling easy-to-manufacture goods, branching, maintaining and cleaning containers, and these ports can serve the surrounding areas, it is classified on the basis of ownership, which is the second criterion for classification

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## 9.6 The role of dry ports in the logistics chain:

The importance of dry ports lies in diverting the movement of goods from the inefficient movement of cargo that affects the environment from carbon dioxide emissions to efficient transport operations through the use of railways, which contributes to reducing inflation, improving the competitiveness of Egyptian exports, and preserving the environment. As follows:

- Reducing the net operating costs of multimodal transport, which leads to the promotion of trade. For example, rail freight is the cheapest means of road transportation, and it is used to transport bulk goods and raw materials. It also has several shapes of carts to suit different types of containers (Jeevan et al.,2022)
- Achieving logistical concepts to produce goods at competitive prices, as the dry port provides distinguished logistical services that include creating an added value that includes goods collection, sorting, merging, storage, container maintenance, and customs clearance, in other words, the transfer of activities from the seaport to the dry port enables the seaport to focus on its main tasks in receiving ships, goods, and containers, and then improve the level of logistics services provided, which contributes to increasing the movement of exports, and imports .
- encourage the foreign trade was represented by industrial, logistic, and residential centers, cities, markets, seaports, and



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dry ports as a whole, This leads to Low maintenance costs for transport infrastructure, where rail and truck transport achieve a competitive advantage for developed ports through their role in seaports, and this cannot be achieved without linking the advanced road and rail transport network between them, allowing the speed and ease of movement of goods between all elements of the transport system And (Darwish, 2016).

- conclude from this that the importance of the dry port is to get rid of the problem of cargo accumulated in seaports and to maximize the benefit from the complementary role of the port to revive international trade and transit traffic and link seaports with neighboring cities, facilitating the multi-modal transport process, reducing transportation costs, storing empty containers, postponing the payment of customs duties for imported goods until full receipt, organizing the transport chain by performing every means of transport its appropriate role, and dealing with all means of transport (trucks, railways, river transport) to achieve integration, which would avoid traffic jams by reducing road loads. Increasing the port's competitiveness by providing storage spaces to increase the number and volume of goods and containers handled. Keeping pace with global trends to facilitate cross-border trade through border ports, such as the Salloum port on the western borders of the Arab Republic of Egypt, Qustol and Arkin on the southern borders of the Arab Republic of Egypt and achieving

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competitive advantages for investors, by reducing the rates of time taken to complete customs release and export procedures (Miraj et al.,2021).

### **9.7 Advantages of operating dry ports**

The new dry ports will have a positive impact on Egyptian investment, which will lead to a competitive advantage for Egyptian products among importers and exporters locally or abroad, as follows:

- Supporting multimodal transport applications: The application and establishment of dry ports helps to achieve integration between different modes of transport, which works to take advantage of the comparative advantages of different modes and reduce the final cost of products, through a good link between seaports and dry ports, and that the dry ports be the destination The final mentioned in bill of lading (via a designated sea port).
- Developing transport services between Arab countries: As part of the dry ports plan to develop various types of transport services between the world's Egyptians, by linking them to the cluster railway network and the land transport network, Egypt's dry ports become a global logistic trade center, which will have the greatest impact on facilitating trade traffic, which is the competitive advantages enjoyed by various world countries in the field of maritime transport.

- Dry Port Digital Infrastructure: The basic concept of creating different investment projects and giving them multiple advantages is to seek to attract foreign capital through the introduction of digital infrastructure techniques.
- This will be achieved in the proposed dry ports, and the expected link between dry ports and the outside world in terms of global networking is more feasible in these proposed areas, especially as they represent door-to-door transport.
- The climate of competition expected to prevail among dry ports attracts modern technology patterns and reduces the overall costs of the entire chain of transport from product to end-consumer.

## **9.8 Free Zones features and characteristics:**

Dry ports have an important role in reducing the time and cost of transportation through the use of intermodal transportation. Also the role of dry ports in serving the national economy through handling containers and supporting international trade. Dry ports are one of Egypt's interfaces with international trade activities, the flow of import and export of goods, and the encouragement of trucking procedures for transit goods with several countries, and this will help support the establishment of a free trade area between countries. To reduce the burden on seaports, activate container activities at the regional and international levels, plan and manage these ports, and coordinate work among the working parties in them to

ensure smooth workflow and high service performance in them, and to achieve the flow and rapid movement of transit and cargo containers through these ports at the least time and cost (Carboni & Orsini, 2020).

Hence the need to highlight the work and description of the dry ports, in order to be able to study the operational relationship between them and the seaports, as the dry port depends on a directly connected seaport. Near the places of consumption, places of raw safety, and industrial areas to serve the trade-in transit.

In order to transport goods and containers from the seaport to internal dry ports that may be within the same country or in neighboring countries, so that shippers can collect their goods to be shipped with high efficiency to their final destination through transportation International multimodal operations, in addition to the traditional trading operations, the dry port also provides storage and assembly services, maintenance services for container operations and customs clearance (Rousseau, 2009).

Within the framework of the planning of the dry port, the site must be compatible with the planning of the comprehensive transportation infrastructure as much as possible, because this will save huge sums in the event of establishing the port in places far from and developing plans and programs that ensure continuous development of performance, through the introduction of modern systems for the management of dry ports.

And follow-up technological changes in this field, and define a traffic plan for the movement of cars and heavy transport within the port, to reduce risks, provide guide signs, lighting, and various means of communication, and determine the yards required for storage and transportation. Because it will affect the facilitation of the movement of goods.

Warehousing is one of the main tasks of the container terminal. Warehouses are allocated inside the dry port, which are neatly divided to facilitate access to containers, and all operations are carried out on them using various transportation means and equipment such as cranes and trucks (Nguyen et al., 2019).

### **9.9 Importance of Free Zones; their classification and their activities in Egypt:**

Free zones in Egypt are considered a distinct and important investment model for the mechanisms of increasing national product, and investment in free zones enjoys many privileges. There are no restrictions on the nationality of the capital and the freedom to choose the legal form of the project, as well as the freedom to determine product prices and the percentage of profits, in addition to the burden of capital assets and production requirements. And exports and imports of customs taxes, sales tax, and other taxes and fees, projects existing in the free zones are given some guarantees, the most important of which is that they may not be nationalized, confiscated, seized, or expropriated without the judicial path.

Therefore, the importance of free zones in achieving economic goals must be clarified as follows:

- Providing logistic zones.
- Attract capital investment.
- Attract modern technology.
- Increasing the expansion of the agricultural area.
- Increasing exports and creating a positive impact on the balance of payments.
- Investing in the capital assets necessary to support the Egyptian maritime transport.
- The application of the free zones system to the activities of oil transportation and natural gas liquefaction due to the huge investments and advanced technology that these activities are characterized by (Soliman, 2013).

But one of the negatives is that the Egyptian free zones are exposed to many challenges in light of the problems facing their work, and thus reduce the return from them, such as the possibility of shifting in some of these free zones from exporting abroad to smuggling goods inside, which leads to a reduction in imports and the possibility of controlling capitals of a certain nationality on projects within it and put pressure on the national government.

In addition to the absence of an effective oversight body over the zones, the freedom of foreign companies to manage employees in the free zone also entails changing the employment structure prevailing in the community according to their own needs, as the free

zone projects are increasingly relying on temporary labor on the grounds that it is a flexible work system that responds to changes in the demand for labor, which led to the deprivation of national industries of trained technical personnel.

### **Classification of free zones**

The names of the free zones varied according to their purposes and the desired objectives of their establishment, and those names were free zones in seaports, free zones in air ports, investment zones, free banking zones, scientific industrial zones, free industrial export zones, creative storage zones customs transit trade zones, public free zones, private free zones, free cities, free points, foreign trade zones, insurance free zones and we can classify the free zones as follows.

#### **First: Free Trade Zones**

They are those whose activities are limited to importing goods and products from outside the country in which they are located or from within it for storage or packing and then exporting them abroad and part of them to the inside, meaning that they work as a warehouse or storage center and their goals are determined in the development of trade exchange through the development of trade exchange, transit trade, and re-export trade and facilitating the flow of goods to and from the host country, as is the case for some. In countries like Egypt, and worldwide.

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## **Second: The industrial free zones**

Those are designated for industrial investment and related commercial and service businesses exclusively and as an exception to the procedures and restrictions of the industrial policy followed in the state, labor-intensive industries such as textiles, ready-made garments, leather industries, and food industries have predominated over industrial free zones in developing countries.

Then it spread to the assembly industries in the field of manufacturing vehicles, heavy machinery and electronic computers, and one of the most important features of these industries is that they rely heavily on large commercial markets that are usually not available in less developed countries, in addition to that they absorb a large proportion of the technical workforce in the work of those industries, which it can be settled in the host country after a period of time.

One of the most successful industrial free zones in developing countries is the free zone in the Indian city of Candela, and the free zone in Nasr City in Cairo it should be taken into account that the industries that are established in the newly developed industrial free zones do not imitate, clone and compete with local industries and prefer to have their available materials and raw materials destined for export and the industries in which they are established are characterized by the following;

- Environmentally friendly industries.



- New industries rely on new technology.
- Industries that are integrated with the national industries vertically and horizontally.
- Industries that help absorb more national manpower.
- Industries for which materials, raw materials and energy are available locally and are destined for export.
- Industries that meet national or regional needs and compensate for imports from abroad if the objective of the free zone is to compensate for imports.

### **Third: Commercial and industrial free zones**

The third type is the most widespread in the world, as it combines the characteristics and features of commercial-free zones and industrial zones, that is, it includes both industrial zones and commercial-free zones, also called export processing zones, where the state provides all the requirements necessary for commercial, industrial and service companies to practice their activities, whether It was related to the handling of services, storage, transportation, provision of specialized means and equipment, trained manpower, and other infrastructure services necessary for projects, such as matters related to economic activity (Pineda, 2021).

### **Fourth: Multi-purpose free zones**

As they are called free business parks, and after this is the most advanced type of public free zone at the present time, where it engages in multiple activities simultaneously such as

commercial activity, storage, industrial activity, exhibitions, tourism activity and service activity (such as insurance companies, banks and consulting offices), the rich, legal and economic complexes, in addition to the complexes of technology, technical production, television and media, the Internet, maritime transport services, shipping villages, containers, and transit services (Nassar et al., 2019).

### **Fifth: Specialized free zones**

Are those established in a country and determined for a specific type of investment or specific strategic activity (factory or production), that is, the specialized free zones are established with the aim of accommodating a homogeneous group of goods and services that are intended to be directed to a pre-defined market and center around common resources, skills, and technologies, the factors, and elements of its success or failure are similar and have specific competitors, and it is possible to formulate a strategy for it in light of the requirements of the state's economic policy, and grant incentives and facilities associated with this type of investment that would facilitate its establishment and attract investors to it, and specialization is at the level of a branch of industry or services, such as free zone for chemical and petrochemical industries, or for engineering industries (Lajeunesse, 2021).

Free zones in Egypt are considered a distinct investment pattern as they are one of the investment systems subject to the

provisions of investment law No. 72 of 2017 and its executive regulations, whose implementation is supervised by the general authority for investment and free zones (National Center for Housing and Building Research, 2021).

### **Activities of free zones in Egypt**

The establishment of a free zone that includes an entire city shall be according to Egyptian law, and it mainly aims to export outside the country in accordance with special tax, customs and monetary provisions, and all activities to be invested in free zones are permitted in accordance with the policy set by the general investment authority, free zones, mainly industries destined for export abroad, except for:

- Liquor and alcoholic beverages.
- Energy intensive industries.
- Fertilizer industry, iron and steel industry.
- Manufacture of petroleum, liquefaction, manufacture and transportation of natural gas.
- Weapons, ammunition, explosives and what is related to national security.

Each industrial zone is characterized by different activities according to its nature, whether it is industrial or service, we mention, for example, the investments in industrial activity and the attraction of various industries that depend on re-export in the private free zones, which are as follows:

- Paper and printing industry.

- Industry of transportation requirements.
  - Food industries and song products.
  - The manufacture of furniture and wood products.
  - Software and information systems industry.
  - The manufacture of medical and pharmaceutical supplies, and engineering, electrical and electronic industries.
  - Manufacture of leather, shoes and leather products because it is petroleum, mining, chemical and petrochemical industries.
  - Manufacture of spinning, weaving, fabrics and ready-made garments.
  - Land reclamation, sifting and grading of agricultural crops.
- Investments in the service sector in the private free zones

are as follows:

- Information technology services
- Service of refrigerators for preserving and refrigerating and sampling preserved foods intended for export outside the country.
- Petroleum services from leasing petroleum equipment and consulting, storing and re-exporting them.
- Transportation, shipping, navigational services, maintenance and repair of ships and marine equipment.

We find that the media free zone is characterized by its own nature and services only, and mentions them in the following points:

- Educational, academic and training activities specialized.
- Television, cinema and satellite studios, as well as software production.
- Television and radio transmission in compact digital or analogue system.
- Establishing and operating encryption and conditional access systems and satellite communication.
- Tourist and recreational activity, hotels, conference centers and open imaging areas

### **9.10 Customs warehouses features:**

It is intended to store incoming or outgoing goods for the account of the licensee or a third party until the goods are released and exit from the port, using warehouses, sheds and yards designated by the port authorities to carry out this activity.

#### **2.9.1 The concept of customs warehouses**

This concept is one of the important concepts that refer to warehouses that carry out the process of storage for long periods, which are different goods, and it is called long-term storage, and these are other concepts by which customs warehouses are known, for example the following:

The word customs warehouses can refer to open yards used for storing goods and storage facilities, as well as grain silos, liquid silos, tanks, and others. These warehouses are also affiliated with the Ports Authority (short-term and we find that there are private storage companies responsible for long-term storage under customs control)

for clearance procedures and the movement of goods to and from warehouses according to their needs.

Customs warehouses can be defined as a building or secured area used to hold imported goods that are awaiting customs clearance and are in most cases it located close to commercial ports, the licenses for warehouses are fulfilled by the competent authorities to keep the goods until customs duties are paid and the clearance document is granted to them.

When storing the goods in the customs warehouse, the importer and the manager of the customs warehouse bear the responsibility of the goods according to a document signed between the three parties, including customs, and this responsibility ends in the following cases:

- When exporting goods or considering them as an exporter.
- Upon obtaining the clearance document and withdrawing the goods.
- When the goods are withdrawn for the purpose of shipment to the ship or the importer.
- When the goods expire and are considered as damaged by a customs decision (Harvard, 2021).

### ***The Importance of Customs Warehouses***

Customs warehouses are considered one of the main fixed assets owned by most importing companies or large factories, so that they can store their goods near manufacturing or distribution and store them for long periods, and ensure storage spaces that allow storing goods, according to the specialists responsible for managing

the company's warehouse and dividing the various goods into warehouses according to their needs according to For their operational plans, these goods are formed differently, for example:

- There are goods that are assembled and are raw materials, importers are allowed to sort, divide and reclassify goods within the warehouse, making them ready for sale after obtaining clearance (Sidorova, 2020).

### ***Conditions for Customs Warehouses***

There are many different conditions that must be met in order to get the stock in the best shape. Among these important conditions and specifications are the following:

- The customs warehouse in which the goods will be placed must be close to the factory or the place of the goods in order to preserve the goods and not to be any kind of damaged and to maintain the stock in its normal condition and reduce error. These are important points to keep in mind when locating a customs warehouse.
- Appropriate conditions for the stored product must be taken into account, such as temperature, lubrication, etc. of various matters; all of these matters have a major role in increasing the storage period and the validity of the stock.

### ***Classification of customs warehouses***

There are two types of customs warehouses; public customs warehouses and private customs warehouses, each of two types, and they are as follows:

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### ***Types of public warehouses***

The Egyptian Customs Law classified public warehouses into two sections, public, following the authority under state administration, or private, following the authority under private management, according to certain procedures for each of them.

#### ***The first type: a public warehouse, government and public sector.***

It is a government customs warehouse owned by the state and is managed by state employees, for example, the customs warehouses of the Egyptian Public Warehouses Company, through which it carries out customs storage of imports outside the customs office. Disruption of storage costs in seaports to reach competition with the private sector.

#### ***The second type: a public warehouse with public ownership and private sector***

It is a type of state-owned customs warehouse and is leased for use in the authorized goods under customs supervision where the user is responsible for the goods placed in the warehouse. The warehouse permit is provided by the investor (user).

The definition of the user in this type is the person who informs the warehouse system of goods through the statement and documents. They are the basis of customs control, through which all types of goods are kept but with special management, systems, and procedures of the company.



***Types of private warehouses:***

***The first type: owner for the cargo and a private administration***

It is a type of private customs warehouse, where the owner operating his own facilities and user are the same person and are responsible for the goods stored in his own customs warehouse to protect his goods and control the ways of storing and supplying them. as well as pay the tax according to trade transactions.

We can define it in another way, which is the one in which the operator and user are the same people and is in the storage place of the owner of the private customs warehouse, a customs warehouse or even if it is not a storage place and is subject to the provisions of the customs warehouse (Pasichnyk et al., 2021).

***The second type: a private customs warehouse and a general administration***

It's a type of private customs warehouse, the owner makes facilities for all shippers and consignees based on customers, and the goods inside are subject to the customs warehouse system without submitting them to customs. Summarize what was discussed in this chapter through a comparison illustrative of each of the research axes: dry ports, customs warehouses, and free zones.

**Table (3) Comparison between dry ports, customs warehouses and free zones.**

|                   | <b>Dry ports</b>                                                  | <b>Customs warehouses</b>                                         | <b>Free zones</b>                                                                 |
|-------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Importance</b> | Reduce costs<br>customs territory<br>Extension of the sea<br>port | Reduce transportation<br>costs<br>Port storage reduction<br>costs | Attract capital<br>attract industries<br>merchandise trading<br>investment modern |
| <b>Objectives</b> | Connecting to sea<br>ports                                        | customs storage                                                   | Re-export                                                                         |
| <b>Property</b>   | governmental /<br>semi-governmental<br>private sector             | Public sector<br>Private sector                                   | public (government)<br>private sector                                             |
| <b>dependency</b> | Ministry of<br>transport<br>(Dry and Land<br>Ports Authority)     | Ministry of Finance<br>(Customs Authority)                        | Ministry of Investment<br>and International<br>Cooperation                        |
| <b>Activity</b>   | Act as<br>logistical activities                                   | Act as<br>logistical activities                                   | Act as<br>logistical activities                                                   |

**Source: Abd El Rasoul, 2022.**

Table (3) shows a comparison between dry ports, customs warehouses, and free zones in terms of importance, objectives, type of ownership, legal dependency, and logistic activities.

1. Dry ports, customs warehouses, and free zones are considered part of the logistic zone, as the activity of each of the previous three hubs is part of the logistic zone, but with the provision of various activities, which creates a competitive advantage for each hub separately.
2. Despite the availability of all services such as empty container yards, export, import, and transit, and also it is an

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extension of the seaport and a final storage yard to prevent the accumulation of shipments in the seaport.

3. The final point of the goods and the final storage point (the final destination) are determined by the dry port bill of lading according to shipper and consignee.
4. There is a full customs committee permanently, consisting of the movement officer, the assistant in the dry port. This is one of the points that distinguish it from the customs warehouse.

### **9.11 Freight forwarders**

Freight forwarders receive goods from exporters and importers. The freight forwarders take full responsibility for the shipment after agreeing with them on the point of delivery, whether in seaports or the final destination point and thus determine the optimal selection of the shipment path and modes of transport, which achieves safe access to the least possible time and cost.

Hence, the role of the freight forwarder comes in providing advice on choosing the final destination of the dry port or the customs warehouse, which of them achieves the desired goals (Archetti & Peirano, 2020).

It is the entity or person who arranges the process of transporting goods, whether by land, sea, air, or rail to an airport or a cargo port, and arranging a vacuum inside the airport or port warehouses to store the goods until the arrival of the ship or aircraft that will transport the goods to their final destination (Peirano,2020).

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Therefore, It is found that the services that the goods relay, will perform are clarified by offering detailed prices for the relocation of the goods, which are discussed and agreed upon between the shipper and the freight forwarder, to its final destination without delay and in good condition (Kiziltas,2021).

Therefore, It is found from the previous studies that the shipper or consignee needs some requirements for choosing a storage suitable place, such as:-

The arrival of the shipment in the shortest possible time, with the lowest possible cost for door-to-door delivery of the shipment, takes the longest customs grace period for the shipment in warehouses, and arrival the shipment without being stolen or damaged.

To achieve these client requirements, the shipper takes advice from the freight forwarder, as he is the party that has enough experience to fulfill the requirements of the owner of the goods, the freight forwarder's activities will express in the next section.

The importance of the freight forwarders, and the role played by international shipping service companies in trade, whether it is international or local, to carry out the movement of trade through the following:

- Freight forwarders companies advise the shipper of export costs including freight costs, port charges, consulate fees, special documents, insurance costs, storage costs, assembly costs, customs costs, packaging costs, and transportation costs, whether land, sea, or rail, Rivers.

- It plans the most appropriate ways for the nature of the shipment, taking into account that it will not be damaged, increase the cost, and control the time required for the delivery and safety of the shipment, taking into account that the instructions for dangerous goods are followed.
- Reservation of shipping services companies and contracting for the necessary cargo space onboard a ship, plane, train, or truck.
- Provide consultancy and insurance contracts to transport goods on behalf of shippers, and assist them in the event of any problem.
- Cargo service companies advise the shipper on the most appropriate method of transporting the goods and carrying out its procedures for loading, packing, and storing the goods.
- Prepare and display the transport and trade documents required for the export and import policy.
- It deals with customs agents abroad to ensure that goods and documents comply with customs regulations.
- Act as intermediaries in customs negotiations and legislation related to international trade, political and social situations, and other factors affecting the movement of deliver the goods with high efficiency.

Use online e-commerce and modern systems to allow for remote tracking of

## 10. EMPIRICAL ANALYSIS:

Analysis of this research divided into next two sections; the first analysis strength and weaknesses point of dry ports using SWOT analysis and the second questionnaire used to reach research aims and objectives.

### 10.1 SWOT Analysis for Dry Ports

The study focused on the society of freight forwarders and workers in the maritime transport sector and how it is affected by the presence of dry ports, through strengths, weaknesses, opportunities and threats. The discussion highlighted some Components that are critical to the planning process that leads state agencies to activate dry ports. The following table (4) presents the main SWOT analysis for dry ports.

**Table (4) SWOT analysis for Dry Ports.**

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strength points</b> | <ul style="list-style-type: none"><li>• Getting rid of the problem of overcrowding and linking seaports with neighboring cities through the integration process.</li><li>• According to the executive regulations, it is defined as a customs area on the bill of lading.</li><li>• According to the regulation of dry ports, the period of stay of goods in ports is determined for a period of 9 months, which can be extended for a period of 3 months.</li><li>• Reducing the cost of transportation through the use of multi-modal transportation (trucks - railways - river transport).</li><li>• Increasing the carrying capacity of the storage spaces, helps in faster handling of the goods and containers handling.</li><li>• Providing services and logistical activities that have a positive impact on customers to maximize the role of dry ports.</li></ul> |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The impact of using the added value from the point of view of freight forwarders ...

Mrs. Shima Mahmoud Mohamed Abd El Rasoul

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Weaknesses points</b> | <ul style="list-style-type: none"> <li>• Failure to promote dry ports in a way that suits the privileges that characterize them due to the high capital cost.</li> <li>• The absence of a detailed law specifically for dry ports.</li> <li>• -The customs warehouse performs part of the dry port's characterized.</li> <li>• -The misconception of some in naming some public customs warehouses the name of a dry port.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Opportunities</b>     | <ul style="list-style-type: none"> <li>• Customers can take advantage of the competitive advantage by postponing the payment of customs duties until they are fully received.</li> <li>• Increasing the competitiveness of the seaport by providing storage spaces in the dry ports to increase the number and volume of goods and containers handled.</li> <li>• Transforming the movement of goods from inefficient transport operations to efficient transport operations on all land routes to intermodal transport.</li> <li>• Activating logistic activities, especially transportation, storage, and transporting them from the seaports to the dry port site.</li> <li>• The possibility of linking it to the seaports to withdraw goods by rail to reduce the burden on the seaports.</li> <li>• Dry ports will become one of Egypt's interfaces with international trade activities for the flow of import and export of goods.</li> <li>• Encouraging the trucking procedures for transit goods with several countries, which will help support the establishment of a free trade zone worldwide.</li> </ul> |
| <b>Threats</b>           | <ul style="list-style-type: none"> <li>• The spread of customs warehouses and IFS that perform some of the tasks of the dry port.</li> <li>• The dry ports are not operating until now.</li> <li>• Dry ports require huge investments.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Source: Abd El Rasoul, 2022.

## 10.2 Descriptive analysis for the statement of the questionnaire:

The first step of any empirical research is to develop a prototype of the problem, or system of consideration by identifying its various components, factors affecting

performance, independent and dependent variables, and considering their relationships to each other. The prototype allows researchers to develop hypotheses to verify the model.

A survey-based research questionnaire contains a set of questions, also called items, which are used to solve a particular research problem, and these questions were then developed with the aim of collecting different types of data related to information, personal opinions, facts, and situations (Aithal, 2020).

Questions were selected to test whether the activation of dry ports had an effect on raising the efficiency of their performance or not by measuring three independent variables: customs warehouses, added-value, and freight forwarders. Questions 1, 2, and 3 are used to measure the impact of the spread of customs warehouses on the activation of the dry port. Questions 4, 5, 6, and 7 are used to measure the added value of activating the dry port on the speed of container handling, and questions 8, 9, and 10 are used to measure the effect of freight forwarder orientation towards IFS, and the use of a dependent variable which is the dry port. Finally, questions 11,12, and 13 are used to study its impact on the LPI.

The following equation was used to calculate the sample size, as the study population was about 1200 employees, and through the use of this equation, the research sample was determined, which amounted to 300 (Almenara et al., 2020).



$$n = \frac{X^2 * N * P * (1 - P)}{(ME^2 * (N - 1)) + (X^2 * P * (1 - P))}$$

Where:

n = sample size.

$X^2$  = Chi-square for the specified confidence level at 1 degree of freedom.

N = Population Size.

P = population proportion (.50)

ME = desired Margin of Error (expressed as a proportion)

An opinion poll was conducted for the Egyptian dry ports by taking a sample of workers in the field from freight forwarders, customs warehouses, logistic centers and free zones at the level of middle and upper management. 360 copies of the survey were distributed through Google Forms, 327 were answered, 27 were excluded, and 300 were statistically analyzed. The data for the statistical analysis of the questionnaire results were as follows:

### Descriptive analysis

Reliability is a measure of the stability or consistency of test scores. It is the ability for a test or research findings to be repeatable.

**Table (5): Reliability Statistics**

|                    | Cronbach's Alpha |
|--------------------|------------------|
| Dry port           | 0.831            |
| Customs warehouses | 0.702            |
| Added value        | 0.863            |
| Freight forwarder  | 0.933            |

**Source: SPSS program.**

Table (5) show that the value of Cronbach's alpha is greater than (Cronbach's alpha > 0.7), and this indicates that it is a very good value, and it shows that the correlation is strong between the independent variables and the dependent variable.

### ***Customs warehouses***

1- The proliferation of public customs warehouses negatively affects the establishment of a dry port in Egypt.

We found that 59.4% agreed that the proliferation of customs warehouses will negatively affect the establishment of a dry port, 18.3% disagree and 22.3% are neutral, and therefore the majority believes that the proliferation of customs warehouses will negatively affect the activation of dry ports in Egypt.

2- The laws that support the issuance of operating licenses for the dry port differ from the IFS "especially the customs warehouse", which negatively affects the activation of the dry ports in Egypt; 72% agree that dry port licensing laws differ from IFS especially customs warehouses, 6.7% do not agree and 21.3% are neutral, and therefore this will negatively affect the activation of dry ports in Egypt.

3- The means of connecting a dry port to a sea port differ from linking them to general customs warehouses or free zones; 76% agree that existing dry port licensing laws differ from IFS laws especially customs warehouses, 8.3% disagree and 15.7% are neutral, and therefore this will negatively affect the activation of dry ports in Egypt.

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### ***Value Added***

The dry port supports all investors, shippers, exporters and shipping lines in general. We found that 86% agree to support dry ports for all investors and shippers in general, 8% do not agree and 6% are neutral, and therefore this will positively affect the performance of Egyptian seaports. To achieve the success of the dry port, a partnership between the public and private sectors is needed to improve the elements of productivity and speed of circulation. In addition, to achieve the success of the dry port, a partnership between the public and private sectors is needed to improve the elements of productivity and speed of circulation. In addition; 85.3% agree with the impact of the PPP on the competitiveness of dry ports, 6% disagree and 8.7% are neutral, and therefore this will positively affect the performance of Egyptian dry ports. The activities and competencies of the dry port, customs warehouse and free zones do not differ from each other, therefore 28% agree that the logistic activities of the dry ports are similar with the IFS, 54% disagree and 18% are neutral, and therefore this will negatively affect the activation of the Egyptian dry ports.

Correlation is used to test relationships between quantitative variables or categorical variables, in other words, it is a measure of how things are related. The study of how variables are correlated is called correlation analysis.

**Table (6): Correlation between Dry port with Customs warehouses, Added value and Freight forwarder**

|                    | Dry port |         |
|--------------------|----------|---------|
|                    | r        | p       |
| Customs warehouses | 0.710*   | <0.001* |
| Added value        | 0.806*   | <0.001* |
| Freight forwarder  | 0.710*   | <0.001* |

**r: Pearson coefficient**

**\*: Statistically significant at  $p \leq 0.05$**

It is clear from Table (6) that the correlation coefficient between the presence of dry ports (dependent variable) and customs warehouses and freight forwarders (as independent variables) is a value of (0.710) meaning that the relationship is direct and decreases or increases by a similar amount, and the highest correlation coefficient between the presence of dry ports and the value Added value is an of (0.806).

H1: There is a statistically significant relationship between the dry port and the customs warehouse

**Table (7): Single Linear regression for Customs warehouses**

|                                                                            | B     | SE    | Beta  | t       | p       |
|----------------------------------------------------------------------------|-------|-------|-------|---------|---------|
| (Constant)                                                                 | 1.323 | 0.140 |       | 9.437*  | <0.001* |
| Customs warehouses                                                         | 0.615 | 0.035 | 0.710 | 17.422* | <0.001* |
| $R^2=0.505$ , adjusted $R^2=0.503$ , $SE=0.44$ , $F=303.519$ , $p<0.001$ * |       |       |       |         |         |

**F,p: f and p values for the model       $R^2$ : Coefficient of determination**

**B: Unstandardized Coefficients      SE: Estimates Standard error**

**Beta: Standardized Coefficients      t: t-test of significance**

**\*: Statistically significant at  $p \leq 0.05$**

Table (7) shows the impact of the existing dry ports on customs warehouses, where the coefficient of determination  $R^2 = 0.503$ , which means that (50.3%) of the variance in the existing dry port can be explained by the independent variable, the significant significance of the P-value is ( $0.001 < 0.05$ ). This means that the customs warehouse has a positive effect on the existing dry port at 95% confidence level.

H2: There is a statistically significant relationship between the dry port and the added value.

**Table (8): Single Linear regression for Added Value.**

|                                                                         | B      | SE    | Beta  | t       | p       |
|-------------------------------------------------------------------------|--------|-------|-------|---------|---------|
| (Constant)                                                              | -0.306 | 0.173 |       | 1.772   | 0.077   |
| Added value                                                             | 0.66   | 0.043 | 0.806 | 23.527* | <0.001* |
| $R^2=0.650, \text{adjusted } R^2=0.649, SE=0.37, F=553.512^* p<0.001^*$ |        |       |       |         |         |

**F,p: f and p values for the model**       **$R^2$ : Coefficient of determination**

**B: Unstandardized Coefficients**      **SE: Estimates Standard error**

**Beta: Standardized Coefficients**      **t: t-test of significance**

**\*: Statistically significant at  $p \leq 0.05$**

Table (8) shows the impact of the existing dry ports on added value, where the coefficient of determination  $R^2 = 0.649$ , which means that (64.9%) of the variance in the existing dry port can be explained by the independent variable, the significant significance of the P-value is ( $0.001 < 0.05$ ). This means that added value has a positive effect on the existing dry port at 95% confidence level.

H3: There is a statistically significant relationship between the dry port and freight forwarders

**Table (9): Single Linear regression for Freight forwarder.**

|                                                                   | B      | SE    | Beta  | t       | p       |
|-------------------------------------------------------------------|--------|-------|-------|---------|---------|
| (Constant)                                                        | 1.156  | 0.150 |       | 7.710*  | <0.001* |
| Freight forwarder                                                 | 0.668* | 0.038 | 0.710 | 17.386* | <0.001* |
| $R^2=0.504$ ,adjusted $R^2=0.502$ ,SE=0.44,F=302.281* $p<0.001^*$ |        |       |       |         |         |

**F,p: f and p values for the model**

**R<sup>2</sup>: Coefficient of determination**

**B: Unstandardized Coefficients**

**SE: Estimates Standard error**

**Beta: Standardized Coefficients**

**t: t-test of significance**

**\*: Statistically significant at  $p \leq 0.05$**

Table (9) shows the impact of the existing dry ports on freight forwarder, where the coefficient of determination  $R^2 = 0.502$ , which means that (50.2%) of the variance in the existing dry port can be explained by the independent variable, the significant significance of the P-value is ( $0.001 < 0.05$ ). This means that freight forwarder has a positive effect on the existing dry port at 95% confidence level.

**Table (10): Multivariate Linear regression for dry port.**

|                                                               | B      | SE    | Beta  | t       | p       |
|---------------------------------------------------------------|--------|-------|-------|---------|---------|
| (Constant)                                                    | -0.501 | 0.144 |       | 3.475*  | 0.001*  |
| Customs warehouses                                            | 0.273  | 0.031 | 0.315 | 8.720*  | <0.001* |
| Added value                                                   | 0.591  | 0.051 | 0.477 | 11.544* | <0.001* |
| Freight forwarder                                             | 0.202  | 0.038 | 0.215 | 5.373*  | <0.001* |
| $R^2=0.761$ ,adjusted $R^2=0.758$ ,SE=0.31 ,F=*, $p <0.001^*$ |        |       |       |         |         |

**F,p: f and p values for the model**

**R<sup>2</sup>: Coefficient of determination**

**B: Unstandardized Coefficients**

**SE: Estimates Standard error**

**Beta: Standardized Coefficients**

**t: t-test of significance**

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\*: Statistically significant at  $p \leq 0.05$

Table (10) shows the multiple regression analysis for the impact of the three variables under study together on the existing dry port. It was found out that added value has the most significant positive impact on the existing dry port followed by custom warehouses in the presence of other variables ( $P\text{-value} < 0.05$ ) while freight forwarders have insignificant positive impact on existing dry ports.

## 11. CONCLUSION AND RECOMMENDATIONS:

The main problem of this research is the lack of sufficient studies to measure the impact of the operation of dry ports in Egypt, on the speed of container handling in seaports, and to collect the necessary data to measure the positive impact of measuring value-added activities from the operation dry ports. Therefore, the survey was conducted by taking the opinions of freight forwarders and workers in the logistics sector, then verify the results using SWOT to clarify the strategy of operating dry ports in the presence of IFS, which performs the same logistics services. After analyzing the questionnaire, it was found that these results correspond to the researcher's expectations and support the hypotheses of the research, in addition to the fact that the research found through its results that the activation of dry ports will have a positive impact in raising the performance of seaports and improving the (LPI) coefficient for Egypt.

The questionnaire mentioned verified the results of previous studies, to identify the importance of operating dry ports and the challenges they face, so this research includes sufficient information for researchers through its application to marine port authorities.

Dry ports are an internal land built within the country, near seaports or near industrial zones to be a starting point or final destination, for goods, where all services performed within seaports are provided as warehouses, to store goods and squares to store containers received up to the customs procedures for goods, which is completed with dealing directly with the market needs of adjacent areas.

Previous studies have found that the main objective of operating and succeeding dry ports depends on the efficiency of the integrated interconnection process between all modes of transport and the existence of infrastructure that allows this to relieve pressure on the Egyptian road network and reduce the proportion of accidents, facilitating container handling from the dry port to the port and returning through the port (Fast Electric Rail - Road Transport - River Transport), thus, will improve the performance of seaports,

It will also upgrade Egypt's logistical performance indicators, as the port will play its main role, namely merchandise trading only, which will be reflected on the global trade movement.

It was concluded that there was a conflict in the concept of dry port and customs warehouse by parties involved in maritime



transport and this was explained in chapters two and three in chapter two. A comparison was made between dry ports, customs warehouses, and free zones as illustrated by a factual example. The existence of a customs warehouse in the name of the 10th port of Ramadan dry port in Port Said Governorate Container Handling Company, already operating from 2010 to 2020, is described in chapter three.

The Research hypotheses, summarized in three hypotheses: customs warehouse, freight forwarders, value-added, and impact on the dry port, were also tested and analyzed. Data collection was based on the questionnaire, and the data was then analyzed using the SWOT to clarify the strategy of operating dry ports in the presence of IFS, which performs the same logistics services.

Research recommended that:

- The need to study the operation of dry ports to ease pressure on seaports, prevent overcrowding and container handling, and maximize port expansions to revive international trade and transit.
- The need to strengthen public-private partnerships in the management and operation of dry ports because of the huge capital they need for implementation to improve the efficiency of port performance.
- The competent authorities can reconcile the requirements between dry ports and financial services, which issue regulations including the possibility of certifying customs

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warehouses that meet the requirements of dry ports and grant them the powers to do so.

- The difference between dry ports and customs warehouses operating under the name of dry ports needs to be clarified through maritime conferences and seminars.

Proposed solutions are:

- The use of a fast electric train relieves pressure on the Egyptian road network, which will save millions of pounds annually through the provision of solar and petrol, as well as reduce the cost of road maintenance.
- Improving infrastructure will increase Egypt's classification globally, which will attract investors.
- The issuance of permits within dry ports is allocated to facilitate the procedures for setting up factories and attracting investors.
- Limiting the extraction of permits for customs warehouses located outside the dry port circle.

Finally, the proposed solutions on the road map for the future of Egypt's dry ports were presented, and further studies were proposed.

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