Analyzing the efficiency criteria of the hub ports in the Mediterranean (The current state of the hub ports in the vicinity of East Port Said port)

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Abstract:

As a result of the competitive nature of the shipping industry, the process of selecting a hub port for trans-shipment has become complex with many decision-making criteria to be taken into account, and competition between pivotal ports has accelerated across different regions. The emergence of various liner service networks, such as "Hub and Spoke" and "Relay", has intensified the complexity of the process of selecting the hub port. The overlap of maritime markets served at the same time by many competitive hub ports has provided various central port options for shipping lines.

The volume of world maritime trade has seen a general trend towards continued growth, which continues to be heavily influenced by the development of the world economy and trade.

According to (UNCTAD, 2018); Africa despite its limited economic potential, accounted for 7% of shipping global trade and 5% of imports, but only 4% of container trade. This can be explained by the poor quality of the continent's port infrastructure and the lack of connectivity between remote and landlocked countries. This paper aims to explore the standards of the Global Hub in an international context to bridge the gap in basic standards that could make East Portside ports the center of the Mediterranean and African countries Increase. It also gives an overview of the most important ports in the Mediterranean (East Portside, Malta, and Tangier). As a result, the criteria for selecting the hub port have been discussed, and the findings and interpretations of this paper have the potential to have a significant impact, encouraging the exploitation and maximization of the port of East Port Said's development and increasing its global participation.

Keywords: Container port, Mediterranean Sea, Shipping lines, Global hub port, maritime transport.

تحليل معايير كفاءة الموانئ المحورية في البحر المتوسط (الوضع الحالي بالموانئ المحورية بمحيط ميناء شرق بورسعيد)

المستخلص:

نتيجة للطبيعة التنافسية لصناعة الشحن، أصبحت عملية اختيار ميناء محوري لإعادة الشحن معقدة مع العديد من معايير اتخاذ القرار التي يجب أخذها في الاعتبار، وتسارعت المنافسة بين الموانئ المحورية عبر مناطق مختلفة. مما أدى لظهور العديد من شبكات خدمة الخطوط الملاحية المنتظمة مثل "Hub and Spoke" و "Relay" مما كثف وعقد عملية اختيار منفذ المحور. كما أدى تداخل الأسواق البحرية التي تخدمها في نفس الوقت العديد من موانئ المحاور التنافسية إلى توفير العديد من خيارات الموانئ المركزية لخطوط الشحن.

شهد حجم التجارة البحرية العالمية اتجاهًا عامًا نحو النمو المستمر، والذي لا يزال يتأثر بشدة بتطور الاقتصاد والتجارة العالميين. وفقًا للأونكتاد في عام ٢٠١٨، شكلت إفريقيا ٧٪ من تجارة الشحن العالمية و٥٪ من الواردات؛ على الرغم من إمكاناتها الاقتصادية المحدودة، ونسبة ٤٪ فقط من تجارة الحاويات. ويمكن تفسير ذلك من خلال رداءة نوعية البنية التحتية للموانئ في القارة ونقص الاتصال بين البلدان النائية وغير الساحلية. تهدف هذه الورقة إلى استكشاف معايير المحور العالمي في سياق دولي لسد الفجوة في المعايير الأساسية التي يمكن أن تجعل موانئ شرق الميناء مركزًا للبحر الأبيض المتوسط والبلدان الأفريقية. كما يقدم لمحة عامة عن أهم الموانئ في البحر الأبيض المتوسط (شرق بورسعيد ومالطا وطنجة). ونتيجة لذلك تمت مناقشة معايير اختيار الميناء المحوري، ومن المحتمل أن يكون لنتائج وتفسيرات هذه الورقة تأثير كبير، وتشجيع استغلال وتعظيم تنمية ميناء شرق بورسعيد وزيادة مشاركته العالمية.

الكلمات الدالة: ميناء الحاويات، البحر الأبيض المتوسط ، خطوط الشحن، ميناء المحور العالمي، النقل البحري.

1. Introduction:

The UNCTAD report 2021, noted a decline in global shipping caused by the Covid-19 pandemic by just over 4%; Seaborne trade accounted for 83% of the total volume of world trade while at the same time accounting for 70% of its value. The report also confirmed that the total weight of seaborne trade at the end of 2020 was around 10 billion tons, compared to more than 11.076 billion tons carried by sea during 2019. It is also worth mentioning that the decline in global shipping during 2020 was offset by slight growth during 2019 at 0.5% (UNCTAD, 2021).

The weight of container cargo around the world by the end of 2020 was approximately 1.6 billion tons. The latest official statistics indicate that two thirds of such cargo around the world have been transported to and from the ports of East and South-East Asia, while the remaining one third is distributed as follows: European ports 16%, North American ports 8%, South American ports 7%, and African ports only 4%. The report also noted that about 39% of total container ship traffic around the world was accounted for by China's ports alone, which is natural given that the world's first nine container ports in terms of freight and discharge traffic are located in East and Southeast Asia (UNCTAD, 2021).

At the end of 2020, the world maritime container fleet of all sizes and types was about 5364 ships, increasing from 5158, 5164 and 5269 by the end of 2017, 2018 and 2019, respectively, while the world maritime container fleet was 16.5% by the end of 2020, from

13.4% of the total world fleet that it had registered at the end of 2019. This, in turn, has put increasing pressure on the freight cost for this type of activity. In detail, the top 10 shipping companies have achieved joint capacity by owning and leasing more than 3000 vessels, typical containers have a combined capacity of more than 20 million, and thus these figures represent almost 82% of the total capacity of container ships around the world. In terms of the 2019 ranking of the big ten carrier, it remained close to the 2019 rankings, and in clearer terms, the MAERSK Line maintained the world's leading carriers and even increased its share during 2020 to 18.1% of the global shipping market for containers. It grew quarterly in the number of containers transported by sea by 3.6% during the third quarter, after declining during the first and second quarters of 2020 (UNCTAD, 2020).

Regarding the level of ports, according to the Drewry Research Center, the world's ports recorded a decline in circulation during 2020, which is the worst year since 2016 and the second since the global economic crisis in 2008. Overall, the world's ports experienced a significant decline in the rate of container handling, particularly in the first trimester of 2020, with the outbreak of the Corona virus and Chinese New Year's celebrations, which declined by 53% during the last week of April, according to IAPH. However, a large growth in the third and fourth quarters has helped to make up for most of the losses of the first and second quarters. For example, from the beginning of 2020 to the end of October, the ports of China combined handled 217

million containers, compared to handling 218 million containers for the same period during 2019 (UNCTAD, 2021).

With regard to the indicator of the global link between shipping and container ports, statistics showed that the port of Jebel Ali in the Arab Emirates achieved the highest rate of increase between 2006 and 2020, followed by the port of Colombo in Sri Lanka and the Spanish port of Valencia, followed by the Moroccan port of Tangier. In the same vein, the Moroccan port of Tangier ranked as the first port on the continent of Africa and for the second consecutive year as the most connected African port with the liner, followed by the port of East Port Said in Egypt and the port of Durban in South Africa, while the Chinese port of Shanghai, for several years, has been on the top of this indicator.

On the other hand, Mersin International Port Management INC, the company operating the Turkish port of Mersin International Port (MIP) has confirmed that it broke the typical 2 million container handling record during 2020, an unprecedented number in Turkish ports. In the same vein, according to official Chinese statistics, the port of Shanghai received 43.5 million containers during 2020, compared to 43.3 million, 38.9 million, and 37.6 million containers that it handled in 2019, 2018, and 2017 respectively, to maintain its first position for the 11th year (MIP, ٢٠٢٢).

According to the World Shipping Council, Singapore is the second busiest container port in the world in terms of productivity of containers handled. Singapore is located in the

middle of a network of trade routes connected to 600 ports in more than 120 countries and provides shipping companies with a smooth global commercial connection.

The Maritime and Port Authority of Singapore (MPA) works closely with both port operators and shipping companies to organize and develop the port into a global hub, providing a single terminal for the global maritime community (Maritime and Port Authority of Singapore, 2022).

In the hub port system of container-borne trade, goods are first delivered to a main hub port and then transported to their final destination, whether by sea, rail, road or inland waterways, which will benefit those hub ports. Similarly, exports from the region are collected in the main hub and then transferred to the final destination. While these primary portals are often equipped to allow rapid circulation time for ships, there are usually two basic features that distinguish them from other ports: The main hubs: (a) they tend to be geographically centralized in the region (sometimes with large remote areas - that is, they attract a large quantity of goods that in any case flow through that port); and (b) they could accommodate larger ships than other ports in the region.

2. Research methodology

This research aims to analyze the port's framework in the North African and the Mediterranean, in order to define the key success factors for developing a hub port in the Mediterranean. In this research we will analyze the operational status for the East

Portside, Malta, and Tangier and determine the most important main criteria of the hub port to benefit from them in increasing the participation rate of East Port Said container port.

Through this research, analyzed data on those ports, and provide viable recommendations that will raise the operational capacity of East Port Said port and increase its participation globally as a hub port. This study focuses on assessing the efficiency of the ports of East Port Said, Malta, and Tangier med port, which compete for transit traffic in North Africa and the Mediterranean. Although East Port Said port is located in the far eastern Mediterranean as a major transshipment hub port in Africa, part of Asia and European ports, the world's central ports are currently developing transshipment market shares even in feeder ports.

3. Literature Review

Regarding hub port selection, in 2011, the location of the port, feeder services, intermodal linkages, and port efficiency are all essential hub port selection criteria in Europe. Ship suppliers play a key role in luring shipping businesses to a port, with the quality of chandlery products, modern port management, infrastructure, and the quality of suppliers' services being the most important criteria in port selection (Zarei, 2015).

According to Van Dyck and Ismael (2015), the three most significant requirements / influential elements for a possible hub port are excellent port efficiency and performance, a stable political environment in the country concerned, and suitable port

infrastructure and handling facilities.

A study entitled "Ongoing challenges to parts: In 2020, the Economic Commission for Latin America and the Caribbean (ECLAC) indicated that container ship fleets had undergone changes in size in order to achieve economies of scale to reduce transport costs and improve operational efficiency while seeking compliance with environmental requirements and sustainable development goals.

A study entitled "The next 50 years travel, transport and logistics", issued by 2017 Board Docks Transport Britain, has submitted a forecast by 2067 that autonomous vessels weighing up to 50000 equivalent containers will navigate with aircraft-like units without an operator on board the ships. These are floating containers. The volume of the container trade will increase 2-5 times more than it is now, and Traffic will increase with it in the short term; digital handling will reduce the need for logistics management intermediaries and be closely linked across data systems (Saxon and Stone, 2018).

A study by the International Transport Forum (OECD) in 2018 showed that larger ships had implications for the location and selection of new container ports, where most ports were located near cities. However, they face expansion challenges, so the creation of outlets of new containers away from urban centers has been targeted (OECD, (2018).

A study entitled International Container Ship Transport (ICM) and the challenges it faces for the period 2008-2020 showed that

the increase in the volume of foreign trade has helped the emergence of different types of container ships. The growth in container ship volumes has added a burden to ports, causing operational problems in the main service lines of container ships. In addition, the establishment of road and river transport networks, railways and container terminals is a potential and capacity for ports and improved services as well as the development of port-linked road transport networks as well as the container terminals themselves for the development of integrated multimodal transport systems.

Through a review of previous research, we find that the selection of the hub port and its impact is due to a number of criteria such as the location, services provided, operating efficiency, logistics services, etc. That will be presented through the definition of the hub port and its selection criteria.

3.1 Hub Port Concept:

Hub Ports can be classified by Hub Ports based on activity or Hub Ports based on types of cargo or Hub Ports based on size (Bahana, 2019). Through the linkage of inland transportation systems and ship feeder systems, a hub port serves as a center for products transshipment and a gateway for the economic and manufacturing sectors. Hub Port is a large-scale project. A system of several wharves, shore cranes, and back cargo storage spaces are all part of it. The wharves of Hub Port have been constructed to handle mother ships (mother ships are ships with a

weight of over 80,000 - 100,000 DWT and a capacity of over 8,000 TEU). The loading and unloading will be done by the mother ships, who will then convey the ocean to other continents at Hub Port. (According to LEC Group, 2018).

3.2 The criteria constitute Hub Port:

The following are some of the most important factors to consider while installing a Hub Port:

a) Location: determining the correct location is critical for building and forming Hub Port. As a result, areas adjacent to a major shipping route are surrounded by a slew of massive industrial zones. Furthermore, the port must be placed in an area with a depth of more than 15 meters. the new port will be able to host mother ships with a cargo of 10,000 tons dead weight once these conditions are completed.

b) Free Trade Zone: The hub port must include free trade zones in addition to meeting the requirements of the site indicated in item 1. This will help to entice goods flows from adjacent countries to concentrate at the hub port. As a result, the transit time has been reduced, allowing for more cargo turnover at the port.

c) Port charges: In order to attract customers and increase the volume of international participation, Hub Port outlet prices, as well as the cost of handling services in the port area, must always be attractive, transparent, and specific. This is primarily reflected in the order and scale of port participation globally.

d) Capacity: Hub Ports must be fully equipped with cutting-

edge technology to effectively coordinate operations and divisions within the port, as well as the use of information technology to optimize port operations and container information kept on the yards.

e) Additional utility services: the following services are required in Hub Ports:
   - Information and communication services.
   - Repair service for ships.
   - Crew, water, and fuel.
   - Throughout the process, customs assistance is available at the port.

The primary hub ports in the globe are currently located in Singapore, Hong Kong, Shanghai, Long Beach, and Rotterdam. (LEC Group, 2018).

4. Study of the most important Mediterranean container hub ports.

4.1 East Port Said Port

The port of East Port Said is located in a unique location east of the eastern subdivision of the Suez Canal to be considered as the primary hub of global trade between Europe and the Eastern Mediterranean. In view of this, the Egyptian Government has adopted the idea of creating this port as a hub port over a large area of up to 35 square kilometers, and the station operates in the special free zone system. The port is located at the unique site at the confluence of three continents and on the main road of the

east-west confluence, the northern Mediterranean, the southern industrial zone, the eastern lake of navigation, the western eastern section of the Suez Canal. The maximum utilization of this site is planned to be the first nucleus of a promising industrial zone devoted to export production, as well as to attracting the world's largest liner.

Figure (1): East Port Said Port.
Source: East Port Said port authority (2022).

With the presidential decision giving Port Said the sole right to manage the port, the Authority's administration prepared the port's meta-infrastructure and a container terminal in conjunction with the Suez Canal Container Company. The first container terminal at the port was officially opened on 2 December, 2004, announcing the start of the container terminal.

4.1.1 Port Said port and East Port Said port capacity

By referring to the port's official website, the port's capacity will be reviewed, as shown in table no. (1) As follows:

Table (1): Port Said port and East Port Said port capacity

Port	Area		Maximum design capacity		Containers berths			Total berths (Container berths included)		
	Total area (km2)	Area (km2)	Cargo (million ton)	Container (Million TEU)	No.	Length (m)	Draught (m)	No.	Length (m)	Draught (m)
Port Said	3.00	1.3	12.175	1.1	3	350	13.2	32	4427	13.2
East Port said	72.1	70.6	12.0	5.4	4	2400	19.0	4	2400	19
Total	73.100	71.9	24.175	6.5	7	2750		36	6827	

Source: (The Suez Canal Economic Zone (SC Zone)).

4.1.2 The performance of East Port Said port during 2020.

The annual average number of containers in circulation at Egyptian ports during the period from 2010-2018 was about 6 million, while the number of containers in circulation in 2019 increased to about 7.2 million, including 1.841 million outgoing, 1.684 million incoming, and 721 million transits, according to maritime transport data in 2019. In 2020, the port of East Port achieved outstanding results in container traffic and revenue

collection: of 15% increase in collection revenue, 18.5% increase in equivalent container traffic, 38.1% increase in truck traffic, 85 million tons of container ship cargo, with an 11.6% increase and lower customs release time rates.

The Suez Canal Economic Zone, comprising three ports, port of Port Said, Port of Arish and Port of East Port Said, announced the volume of container circulation during 2020, with 708,684 containers outgoing, 635.642 containers incoming, and 3.474.938 containers in total (4.819.264). During 2019, the volume of circulation of the outgoing containers was (657.410), the incoming container (580.378), and transit container was (3.124.807), with an overall of (4.362.595) containers.

These positive results are due, in spite of the fallout from the new Corona virus pandemic, to a number of factors, notably the operation of the 3rd of July tunnels south of Port Said, which facilitated the passage of goods and individuals between the east and west of the Canal, the incentive package approved by the Economic Zone in April 2020 to attract global shipping, and the upgrading of port capabilities by the operator. The "Suez Canal Container Terminal" SCCT developed a number of equipment and winches, with the development of a total of 2 winches of 6 dock winches, being completed to accompany the world's largest container ships, and the acquiring of a new 6-yard winches at the container terminal as the first shipment of a total of 16-yard winches.

4.2 Malta Port:

Malta Freeport is a modern and fully equipped container terminal, with a total of 2463 meters of operable deep-water docks 771.100 square meters of total container storage area, 15.297 container ground openings, and 1658 cooled openings. All mainline sidewalks in Freeport have a water depth of 17 meters, allowing the corporation to accommodate the newest class of 24000 standard containers. Both stations had 20 dock cranes, 60 rubber-tire bridge cranes, and a variety of other yard equipment.

Figure (2): Malta Ports.
Source: Malta port Authority (2022).

As the third largest shipping port in the Mediterranean, Malta Freeport is a strategic platform for shipping lines that it has chosen as its central port on the Mediterranean, located at the crossroads of some of the world's greatest shipping routes and in the heart of Europe, Africa, and the Asian Middle East triangle,

and Freeport Malta is a major player on trans-ocean trade routes in the Mediterranean, by combining container handling with industrial storage.

Malta Freeport has focused on the concept of "Hub," where cargo is unloaded from large ships and transported to a network of regional ports by regular and frequent feeder vessels. About 96% of container traffic in Malta Freeport is trans-shipment. The logistics concept offers various advantages to Malta Freeport customers, including fewer key port calls, reduced journey times through minimal transfers and shorter transit times, enabling them to focus on lucrative journey stages.

Malta Freeport terminals joined the worldwide TradeLens blockchain supply chain platform in 2020, ushering the terminal into a new digital era. TradeLens is an open platform that connects all participants in the supply chain and enables them to share real-time, actionable data and collaborate in real-time. Malta Freeport may securely share data with partners such as carriers, ports, terminal operators, and other stakeholders through this platform, enhancing the terminal's capacity to provide cutting-edge service, lowering the cost of connecting partners, and optimizing vessel and truck service times. Malta Freeport CEO Alex Montebello hailed the new technology as "a strategic investment programme aimed at transforming Malta Freeport into one of the most technologically advanced and efficient ports in the Mediterranean. Freeport Malta stations have been selected as a connection port on the weekly NEW

NEMO service, linking Malta to 7 new ports around the world, running from the UK to Australia.

4.2.1 Malta Freeport port Capacity:

By referring to the port's official website, the port's capacity will be reviewed, as shown in the table no. (2) As follows:

Table (2): Malta Freeport port Capacity.

Terminal One			Terminal Two			
	North Quay	West Quay	North Quay	South Quay	Ro-Ro Berth	West Quay
Length of Quays	1,000m	290m	513m	660m	220m	118m
Dredged Water Depth	17m	9.5m	17m	17m	12.5m	15m
Total Area	539,643m2		231,357m2			
Ground Slots	10.397		4.900			
Reefer Points	1.258		400			
Equipment	9 Quayside Cranes		11 Quayside Cranes			

Source: Malta port Authority (2021).

A 2019 report by the Office for National Statistics of Malta shows that during 2017, container-packed goods, loaded and unloaded locally, at Malta and Gozo's main ports (Valletta Grand Harbor and Marsaxlok Freeport) amounted to 0.76 million tons and 1.03 million tons, respectively. Containers loaded and unloaded at the same ports amounted to 13.69 million tons and 15.01 million tons respectively. The containers were mainly shipped and unloaded (over 99 per cent of the total) at Marsaxlok Freeport. (Gozo, 2019).

In terms of the number of equivalent containers, the highest circulation rate was in 2018, with 3310000 and 270000, and in

2020, with 240000 as shown in figure no. (3).

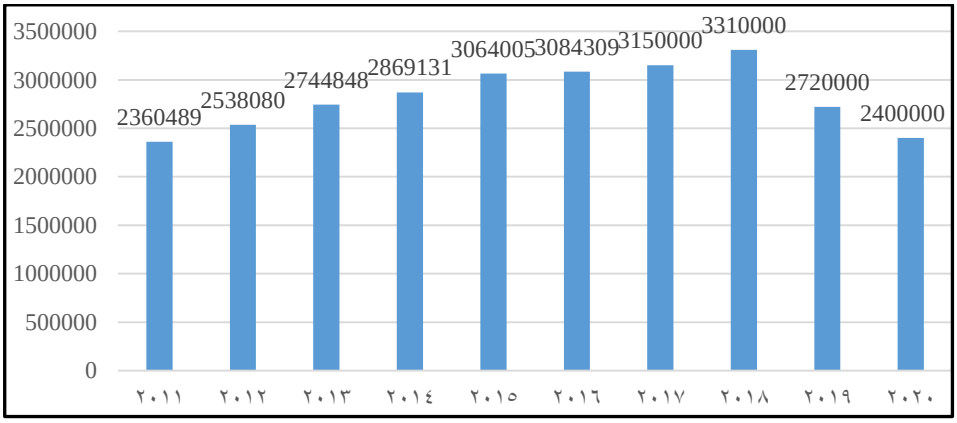

Figure (3): Cargo Throughput at Malta Freeport (TEU's)
Source: Transport in Malta Annual Report 2020.

4.3 Tangier port:

The Tangier Med 1 port complex consists of two container terminals, a railway terminal, a hydrocarbons terminal, a goods terminal, and a vehicle terminal. Two container terminals are located in the Tangier Med 2 port as following:

Tangier Med I is home to two container terminals with a combined capacity of three million TEU. Both terminals have a 1600-meter quay, a socking capacity of 80 hectares, and a depth of 18 meters. In 2007, the first container terminal (TC1) opened, followed by the second container terminal (TC2) a year later. These two terminals helped Tangier Med I become a significant container transshipment hub in the western Mediterranean. The strong performance of major shipping lines operating at container ports, such as Maersk Line, CMA-CGM, Hapag Lloyd, ARKAS,

and others, has helped to cement this position.

Ten Super Post Panamax gantry cranes with a 61T lifting capacity, 23 RTG's 72 TTT (Truck Tractor Terberg) with 76 container Trailor, 2 Reach Stacker, and 7 Empty Handler are among the equipment at the TC1 terminal. At the terminal, there are 1860 reefer plugs. The concessionaire has made a total investment in superstructure and materials of around 140 million EUR. TC2 has eight Super Post Panamax gantries cranes with a 61-tonne lifting capacity, 21 RTGs, 36 trucks, 36 chassis, four reach stackers, one empty handler, and a mobile crane. The concessionaire has made a total investment in superstructure and materials of around 140 million EUR.

Tangier Med I is now a crucial link in terms of connectivity and the development and expansion of (Import/Export) traffic in Morocco, in addition to functioning as a significant container transshipment platform on East/West (Asia/Europe) and North/South (Europe/Africa) routes. Tangier Med I, with its numerous infrastructures, such as rail and roadways, is crucial in connecting the port to the hinterland and facilitating the expansion of Morocco-World trade.

Tangier Med 2: Tangier 2 is the third phase in the development of the Medium Port of Tangier. Two new container stations with a total capacity of 6 million equivalent containers are included in this new port. With a total capacity of over 9 million containers, it intends to strengthen the Tangier Medium

Port Complex's role as a focal point for logistics flows and international trade in West Africa and around the world. Tangier Mediterranean has been the first port in Africa since 2018, as well as the first port in the Mediterranean, and is committed to integrating the top 20 platforms worldwide.

Under a concession agreement, the world-leading MAERSK APM will establish the TC4 container terminal in Tangier 2's medium port. This will be the port complex's second station run by the world-leading firm. The terminal is equipped with the most up-to-date container transportation technology. A total of $800 million has been invested by the private sector.

The Container Terminal No. 3 (TC3) station has an 800 m longitudinal pier and a 36-hectare average area. The station can hold 1.3 million equivalent containers in its nominal capacity. In 2020, a total of 5,771,221 equivalent containers were traded, showing a significant increase over 2019, with trading volume increasing by 20%. As a result of this action, Tangier's reputation as a prominent port in the Mediterranean has been enhanced, and it has now become the first container port in the Mediterranean.

Tangier Med Port is now ranked 24th/500 container ports in the world, with connections to over 180 ports and 70 countries for container business (Tanger Med Special Agency, 2022).

Figure (4): Tangier Med port.
Source: Tangier Med port authority (2021).

In 2020, the average port of Tangier's container traffic productivity broke records. The 50000 + mark for containers handled each month was exceeded 5 times in a row in April, August, October, November, and December 2020 with a new record of 553164 equivalent containers recorded in November.

This performance illustrates the coordination and synergy developed by the various actors involved: Extension Department, Port Chief's Office of the Medium Tangier Port Authority, ship owners, port operators APM Terminals, Euro gate and other stakeholders.

Finally, and with reference to the above, we find that East Port Said Port enjoys great advantages over the rest of the region's ports, in addition to the presence of the Suez Canal as a supportive factor for increasing the volume of investments in the

region. East Port Said port, while the Moroccan port of Tangiers is more focused on West African countries.

And for supporting the progress of East Port Said container port requires more regulatory points which will be mentioned during the recommendations.

5. Comparison between East Port Said Port, Malta and Tangier Lloyd's List (2021).

Table (٣): Comparison between East Port Said Port, Malta and Tangier.

Ranking	East Port Said Port	Malta	Tangier
	46	76	25
annual throughput in 2020 (TEUs)	4.009.672	2.441.589	5.771.200
Annual % change (2019-2020)	+9.60%	-10.3%	+20.2%
Length of quays	2400 m	2463 m	4400 m
Storage area	635.000 m² 5.500.000 (TEUs)	771.100 m² 3.800.000 (TEUs)	3.500.000 m² 9.000.000 (TEUs)
Berth depth	19 m	17 m	18 m
quays Equipment	12 super post p. c. 41 R.T.G	22 dock cranes 60 rubber-tire bridge	18 super post p. c. 44 R.T.G

Source: Prepared by author through a number of documented sources (2021).

Through the data in the previous table (Table: ٣) and the data obtained from the official website of the concerned ports, as well as the international reports issued by international bodies, it was found that East Port Said Port possesses advanced international elements and standards that enable it to rise to a better rank in the

world in terms of infrastructure, location, water depth and short distance with Highways. Therefore, it only needs to exploit these capabilities and many organizational measures to attract new customers, which is mentioned in the recommendations.

6. Conclusions and Recommendations

Promotion and financing of integrated port and transportation infrastructure, as well as regulations that provide for and foster competition, are key steps in the process of transforming ports into regional hub ports. Global experience has demonstrated that converting a public port to a private model result in a good outcome, which is reflected in the Egyptian maritime economy and the Egyptian economy as a whole.

As a result of the rise of hub ports, Egyptian container ports need to exploit their unique advantages from a distinct geographical location and link them between two continents and the volume of transit trade from the Suez Canal to address challenges in port and terminal infrastructure, operational efficiency and governance, with a view to leading the region, exploiting natural features and making Port Said port the most central port in the region.

This requires greater effort by national actors in a number of areas in particular the following:

- Continuous development of Egyptian port facilities to deal with larger vessels by increasing their Entry channel depth and berths and ensuring appropriate equipment;

- Developing the performance of the human component as it continues to be equipped to deal with new maritime transport technology.
- The interest in ICT in administrative processes and the improvement of the economic performance of Egyptian ports to achieve the integrated concept of smart port and sustainable development in Egyptian ports.
- Connecting Egyptian container ports with industrial and logistical zones to increase the added value of port operations and increase the effectiveness of information technology.
- Linking Egyptian seaports under a single umbrella, establishing a specialized authority at the highest level for marketing and contracting, and providing concessions to major liner owners to ensure customer attraction, increased activity and global participation.
- Develop a comprehensive program to restructure Egyptian seaports in line with the concept and applications of smart ports.
- Improving access to remote areas and landlocked countries on the African continent through multimodal infrastructure, transport corridor and coordination of transport systems, including road and rail transport;
- Implementation of smart port standards, digitization and rapid exchange of information between stakeholders to improve the level of service provided and speed of procedures to ensure customer attractiveness.

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