Competitiveness Determinants for the Egyptian Ports located on the Mediterranean and those for the Red Sea : A Comparative Study

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Abstract

The study aims to construct a comparative analysis for the competitive determinants between the ports located on the Mediterranean Sea and for those located on the Red Sea. The comparison is to include the (14) services provided on these ports. The comparison is to include the ports of Alexandria, El Dekhila, East Port Said, and West Port Said, and Damietta being the ports that located on the Mediterranean Sea, while the ports located on the Red Sea are to include the ports of Suez, Safaga, Nuweiba, Adabya, and El Ain El Sokna. The sudy found that the pricing, the quality of services provided, the infrastructure quality, and the technological development are considered the important determinants for the competitiveness for both the ports located on the Mediterranean Sea and for those located on the Red Sea. The provision of the speedy services is not an important determinant for the competitiveness for the ports located on the Red Sea, while it is important factor for those located on the Mediterranean.

Keywords: Competitiveness; Egyptian ports located on the Mediterranean Sea ; Ports located on the Red Sea; Quality of Services, Quality of Infrastructure, the speedy services, Pricing, Technological Development.

1- Introduction[1]

Ports are essential transportation hubs in supply chain networks, but they're also crucial for the growth of the domestic economy and for altering the composition of global shipping. For these reasons, assessing a port's competitiveness has become crucial to its continued existence and progress. As a result, ports are now seen as crucial to a nation's industrial growth and overall economic growth. Additionally, ports and the nation's industries have a special relationship that served as the foundation for the country's development.

Maybe more than many other economic sectors, ports' competitiveness has gotten considerable attention in the scholarly literature. This is due to the vital role that ports play as essential nodes in highly competitive global supply networks. The competitiveness of ports is determined by a wide range of

[1]This study is the third of a series of publications of a project started by December 2019 ended on July 2022, where the author had done visits to the commercial ports in Egypt, and had designed a survey to construct different indexes related to the competitiveness of the Egyptian ports.

dynamic factors. However, various stakeholders place different weights on them.

The paper studies the competitive determinants for both the Egyptian ports located on the Mediterranean and those located on the Red sea . The paper divided into the following parts Section (2) is the literature review, section (3) is the Methodology, section (4) constructing the index and checking the reliability. Section (5) is the empirical Model and the findings, section (6) is the Discussion. section (7) is the conclusion, and finally section (8) is the recommendations

2- The Literature Review :

According to Parola et al. (2016), port costs are thought to be the most significant criterion for competitiveness. These costs, however, encompass more than just the port fees levied by port authorities; rather, they also include all other expenses borne by port users, such as storage, transportation, and indirect costs like extended port anchorage times. Naturally, most of the studies indicate that infrastructure and the quality of services play a major role in determining a port's competitiveness and that these factors vary amongst ports. The port's infrastructure and facilities, operational efficiency, costs and tariffs, service quality, port facilities, and technology are the main drivers of port competitiveness.

De Martino, M., & Morvillo, A. (2008) divided the criteria for port competitiveness into two categories: soft (supplied services, inter-organizational relationships between port stakeholders, communication systems, safety and security) and hard (superstructure, infrastructure, inland logistics platforms, equipment, and geographical location).

According to Wiegmans et al (2008), port selection is influenced by a number of significant factors, including location, port infrastructure, efficiency, costs, and pricing strategies. A model for port choice decision making in uncertain environments was created by Yeo et al (2014). The authors acknowledged that, in the context of global supply chains, port choice is becoming a more significant consideration. Their research sought to address the intricacies and uncertainties associated with shipping lines and shippers' port selection processes. The study determined and assessed the important variables that affect port choice, these likely included aspects such as port infrastructure quality, location, efficiency, pricing, and connectivity.

Tongzon, J.L.& Sawant, L. (2007) found in their study that port's fees and the availability of certain port services are the critical factors in the port choice decision making process for the shipping lines.

Port competitiveness, according to Heaver (2006), is the ability to gain a competitive edge through the development of infrastructure and high-quality services. Anderson (2009) et al.

found in their study that the factors affecting shipping companies' port choice. These include marketability, port charge, advancement/convenience of the port, physical/operational ability of the port, and operational condition of shipping lines.

K. Cullinane (2005) in his paper that the ports will continue to capture a larger market share due to its inherent advantages, including natural endowments such as water depth, competitive pricing strategies, and anticipated improvements in service quality resulting from planned enhancements to inland transport infrastructure and logistical systems. Ningbo port will maintain its greater market share due to its inherent advantages, which include competitive pricing strategies, natural endowments like water depth, and expected improvements in service quality from planned upgrades to inland transport infrastructure and logistical systems.

Tongzon, J. (2002) discovered in his research that key elements impacting ports' competitiveness are operating expenses, which include port and cargo/passenger dues, berth charges, victualling, hiring of handling equipment, pilotage, towage, and passenger and cargo handling fees. Port usage may be discouraged by higher dues and fees that increase the cost of doing business for shipping lines and cargo owners. Simplified vessel operations and increased port productivity are facilitated by competitive towage and pilotage rates as well as effective handling equipment operations. Furthermore, low-cost passenger

and cargo handling fees as well as victualling services increase a port's appeal, reducing vessel idle time and strengthening its place in the world's maritime market.

Strandenes et al. (2000) offered significant insights regarding port pricing and competitiveness. The paper also emphases on the importance of port pricing and scheduling, as these can strengthen the competitiveness of the short sea shipping as port costs make up a significant portion (over 50% on average) of total short sea shipping costs in Europe. The study also emphasis on other important factors: the operational efficiency , the service level, port tariffs, and port facilities.

Bird's (1988) study on the views of European freight forwarders reaffirmed that port preference is primarily determined by service frequency. According to Tongzon (1995, 2002), "time" is crucial in port choice , and a key factor in determining that time is service frequency. Additionally, he demonstrated how port efficiency—as well as a particular kind of decision-making—is the most crucial component in port selection and performance.

3- Methodology :

Throughout the study, two models to investigate the competitiveness determinants in the Mediterranean and the red sea had been conducted. A survey for measuring competitiveness in both Mediterranean and Red Sea ports had been used (see appendix 1).

3.1 Survey Design:

The survey was designed in both Arabic and English languages, a pre- test had been conducted for (25) shipping agents accordingly further enhancement of the Questions and the scaling of the questions had been accomplished , the target shipping lines included those working for the ports of Alexandria, Eldekhila, Suez, Safaga, Newabaa, East Port Said, West Port Said, Adabia, Ain Sokhna and Domiatte. The surveys also included questions for the demographic data for each shipping agency.

3.2 Sampling :

Given that the number of shipping agents in Egypt are (286), Then by using the following formula using the correction factor:

sample size n= $\frac{Nn_0}{n_0+(N-1)}$

n= $\frac{196*286}{196+(286-1)} = 117$

So, the target to reach around (117) for shipping agent " Nawar,2024"

3.3 Data Collection Method :

The collection of data was through an interview with the shipping agents. The data collection system was built using Survey solutions which an advanced electronic data collection system, and the database was saved on the CSpro program.

Post review for the data collected had been done and approval of the consistent forms and the repetition of the inconsistent ones through a process of a quality monitors.

3.3.1 Field Survey on the Determinants of Competitiveness for the Egyptian Ports:

The survey collected in addition to the demographic characteristics of the sample, the required data on the previously identified factors for the competitiveness of the Egyptian ports located on the Mediterranean sea and located on the Red sea for the services of pilotage, towage, mooring, quarantine, docking, marine inspection fees, water supply, waste removal, water drainage, food supply, spare parts supply , repairs and maintenance, fuel supply and loading/unloading.

The survey is conducted for the Egyptian ports located on the Mediterranean and the Red sea for the ports of Alexandria, Eldekhila, Suez, Safaga, Newabaa, East Port said, West Port said, Adabia, Ain Sokhna and Domiatte. A pilot study was implemented to test the reliability of the survey; furthermore, different shipping agents were interviewed before and after the survey's implementation to complement the survey with more specific data and information.

Based on the surveyed population and using the sample size (ss) in equation (1), the selected random sample is (117) for the shipping agents.

$$ss = \frac{\frac{z^2 \cdot p(1-p)}{e^2}}{1+\frac{z^2 \cdot p(1-p)}{e^2 N}} \qquad (1)$$

Where, ***z***: z-score, ***p***: Population proportion, ***e***: Margin of Error (7%), and ***N***: Population size.

More on the survey design is presented in Appendix (1).

3.3.2 Empirical Model to Examine the Determinants of competitiveness in the Mediterranean and the Red Sea in Egyptian ports (Regression Model)

Firstly, we construct Egyptian competitiveness in the Mediterranean and the Red Sea Index.

Table 1: The level of the following services compared to other (international) ports in the Mediterranean (%)

Items	Very poor (1)	poor (2)	Medium (3)	Good (4)	Very good (5)
Pilotage	17.1	9.4	45.3	25.6	2.6
Towage	10.3	11.1	59.8	15.4	3.4
Mooring	15.4	23.9	35	25.6	0
Quarantine	8.5	22.2	47	9.4	12.8
Docking	6	23.9	32.5	17.9	19.7
Marine inspection fees	15.4	14.5	39.3	28.2	2.6
Water supply	25.6	14.5	45.3	3.4	11.1
Waste removal	22.2	19.7	38.5	6.8	12.8
Water drainage	20.5	17.1	25.6	16.2	20.5
food supply	10.3	21.4	41	23.1	4.3
Spare parts supply	18.8	25.6	32.5	18.8	4.3
Repairs and maintenance	25.6	21.4	39.3	12	1.7
Fuel supply	13.7	15.4	34.2	21.4	15.4
Loading/unloading	23.9	7.7	27.4	23.1	17.9

In Table (1) and for competitiveness of the (14) abovementioned services for the Egyptian Ports located on the Mediterranean and compared with the other international ports located on the Mediterranean, the results indicate that the middle categories i.e, Medium and good are the dominants in the data sample.

Table 2: The level of the following services compared to other (international) ports in the Red Sea (%)

Items	Very poor (1)	poor (2)	Medium (3)	Good (4)	Very good (5)
Pilotage	0	8.5	46.2	40.2	5.1
Towage	18.8	8.5	29.9	20.5	22.2
Mooring	3.4	14.5	42.7	36.8	2.6
Quarantine	6	19.7	47	22.2	5.1
Docking	4.3	28.2	30.8	29.1	7.7
Marine inspection fees	3.4	9.4	35	45.3	6.8
Water supply	25.6	12.8	23.9	20.5	17.1
Waste removal	25.6	23.9	29.1	7.7	13.7
Water drainage	12.8	23.1	28.2	21.4	14.5
Food Supply	12	27.4	35	18.8	6.8
Spare parts Supply	17.1	25.6	18.8	32.5	6
Repairs and maintenance	18.8	23.1	34.2	22.2	1.7
Fuel supply	23.1	5.1	29.1	19.7	23.1
Loading/unloading	10.3	20.5	42.7	9.4	17.1

In Table (2) and for competitiveness of the (14) abovementioned services for the Egyptian Ports located on the Mediterranean and compared with the other international ports

located on the Mediterranean, the results indicate that the middle categories i.e, Medium and good are the largest percentages in the data sample.

4. Constructing Different Indices :

4.1 Checking Reliability :

4.1.1 Constructing the reliability Statistics :

To assess the reliability for each set of variables, Cronbach alpha was checked. This study has set the cutoff value for 0.7 of Cronbach alpha as a minimum score for reliability based on the literature (CHO & KIM, 2015; Lance et al, 2006; Griethuijsen et al., 2014).

For the first set of variables for the importance of prices items, the data is reliable as shown in table 3 with Cronbach alpha 0.78

Table 3: Reliability statistics for the importance of prices items

Cronbach's Alpha	N of Items
.780	14

For the second set of variables representing the importance of speed, the data shows that the reliability analysis of Cronbach alpha is equal to 0.828 as shown in table 4 when including the fourteen items.

Table 4: Reliability statistics for the importance of speed items

Cronbach's Alpha	N of Items
.828	14

For the third set of items the data represented high reliability as shown in table 5 with Cronbach alpha 0.923.

Table 5: Reliability statistics for the importance of quality items

Cronbach's Alpha	N of Items
.923	14

Table 6: Reliability statistics technology development importance

Cronbach's Alpha	N of Items
.834	14

As for the fourth set representing the technology development importance variable, data is reliable as shown in table 6 with Cronbach alpha 0.834

Table 7: Reliability statistics for the infrastructure items

Cronbach's Alpha	N of Items
.942	14

In table 7, the reliability for infrastructure importance variable is high as shown in table 7 with Cronbach alpha 0.942

Table 8: Reliability statistics for the competitiveness in the Mediterranean items

Cronbach's Alpha	N of Items
.855	14

Also, the reliability for competitiveness in the Mediterranean variable was checked as shown in table 8 with Cronbach alpha 0.855

Table 9: Reliability statistics for the competitiveness in the red sea items

Cronbach's Alpha	N of Items
.901	14

In table 9, the reliability for competitiveness in the red sea variable is high as shown in table 9 with Cronbach alpha 0.901

5. Competitiveness Determinants in the Mediterranean and Red Sea: Empirical Model

As explained in the previous section, the Competitiveness Determinants is the dependent variable and it is continuous in nature where the highest value represents the higher level of Competitiveness. This was done in Mediterranean and red sea. The regression model takes the following form:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k, \quad (1)$$

Where,

- X is the set of k predictors/independent variables
- α_j is the intercept,
- β is the parameter for each predictor variable.

As mentioned before, we have four predictors/independent variables which are price importance, quality importance, speed importance, technology development importance and infrastructure importance.

5.1 Empirical Findings

As previously indicated, we apply linear Regression model. To make sure that our results are reliable, linear Regression model assumptions were checked and verified for both models[2].

Model for Competitiveness Determinants in the Mediterranean

$Competitiveness\ in\ the\ mediterranean = -1.039\text{E} - 7 +$ 0.078* importance of prices + 0.150 * speed importance+0.005* quality importance+ 0.027* technology development importance+ 0.766* infrastructure importance

Model for Competitiveness Determinants in the Red sea

$Competitiveness\ in\ the\ red\ sea = 9.908\text{E} - 9 +$ 0.319*Importance of prices -0.092* speed importance+0.421* quality importance+ 0.056* technology development importance + 0.161* infrastructure importance

[2] Assumptions of the Multiple Linear Regression Model are: (1) Linearity (2) Normality, (3) there is no multicollinearity between independent variables, (4) there is no autocorrelation and (5) homoscedasticity.

Table 10: Regression estimation results for shipping agents (Dependent variable is competitiveness in the Egyptian Ports for both the Mediterranean and the Red Sea

Variable	**Parameter Estimates**	
Variable Option	**Mediterranean Model**	**Red Sea Model**
Constant	-1.039E-7	9.908E-9
X_1		
Prices Importance	0.078**	0.319***
X_2		
Speed Importance	0.150**	-0.092
X_3		
Quality of services Importance	0.005**	0.421**
X_4		
Technology Development Importance	0.027**	0.056**
X_5		
Infrastructure Importance	0.766***	0.161***
Goodness of fit		
Adjusted R^2	**0.972**	**0.458**

***Source*: The study.**

*** Significant at 0.1; ** significant at 0.05; *** significant at 0.01**

Prices importance. price importance has a significant effect on the competitiveness in both models Mediterranean and red sea. Regarding Mediterranean model, we can conclude that when price importance increases, competitiveness will increase by 0.078 on average. Regarding red sea model, we can conclude that when price importance increases, competitiveness will increase by 0.319 on average.

Speed Importance. Results of the Mediterranean model show that a significant effect of speed on competitiveness is as by increasing speed by one unit, competitiveness will increase by 0.15. On the other side, speed importance doesn't have a significant effect on competitiveness in the Egyptian Ports for red sea.

Quality Importance. Results of the red sea model show that a significant effect of quality importance on the competitiveness as by increasing quality by one unit, competitiveness will increase by 0.421. Also, quality importance does have a significant effect on competitiveness in the Egyptian Ports for Mediterranean.

Technology Development Importance. The results show that Technology Development Importance have a significant effect on competitiveness in the Egyptian Ports located on the Mediterranean and on the red sea.

Infrastructure Importance: Results of the Mediterranean model show that a significant effect of infrastructure on competitiveness as by increasing infrastructure by one unit, competitiveness will increase by 0.766. Also, infrastructure importance have a significant effect on competitiveness in the Egyptian Ports on the red sea.

5.2 Statistical Checks

Before integrating the data, the linearity, normality and homoscedasticity assumptions must be fulfilled, and

multicollinearity must be avoided, to receive reliable results from the regression analysis. (Lobaskova, 2018)

The linearity assumption states that a constant rate of change should occur in the dependent values due to changing the independent variables. The normality assumption states that the residuals of the model must be normally distributed with a mean of zero. (Lindstromberg, 2020) The homoscedasticity states that the residuals must be approximately equal for all predicted dependent variables. (Lobaskova, 2018) Finally, multicollinearity refers to the correlation among the independent variables which must be avoided (Ragsdale, 2018). In this study, all assumptions except homoscedasticity, are verified for the four models. Statistical checks were done for both models, Mediterranean and red sea.

5.2.1 Multi-collinearity

Table11: Collinearity check

	VIF	Tolerance
Importance of prices	1.773	0.564
Importance of speed	3.847	0.260
Importance of quality	1.076	0.930
Importance of technology development	1.098	0.911
Importance of infrastructure	3.322	0.301

The variance inflation factor (VIF) for each independent variable in the regression model is used to verify that multicollinearity is avoided between the independent variables. From table 11, VIF for the four variables is less than 5. So, there is no multicollinearity).

5.2.2 Autocorrelation:

Table12: Durbin Watson test results

	Model 1	Model 2
Durbin Watson	2.166	2.186

From table 12, Durbin Watson is very close to 2. Then, there is no autocorrelation in both models . So, Autocorrelation assumption is avoided between errors.

5.2.3 Normality :

Figure 1: P-P plot for Mediterranean model

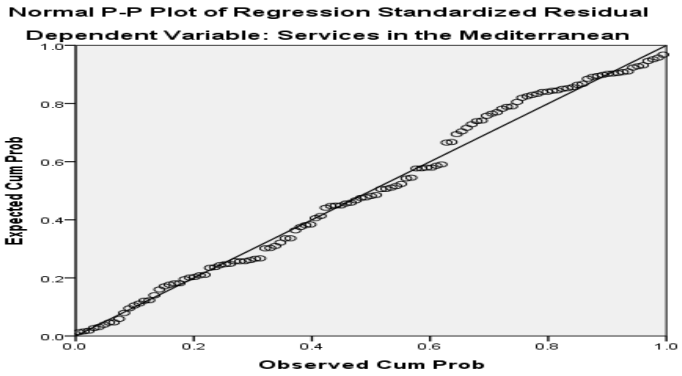
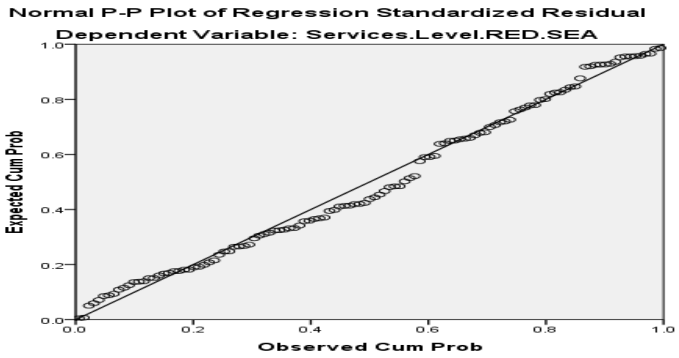


Figure 2: P-P plot for red sea model



The P-P plot for the residual points' distribution shows that they are scattered close to the 45° line, (the normal distribution line). Hence, two models have a valid normality assumption.

5.2.4 Homoscedasticity :

Figure 3: Checking Homoscedasticity for Mediterranean model

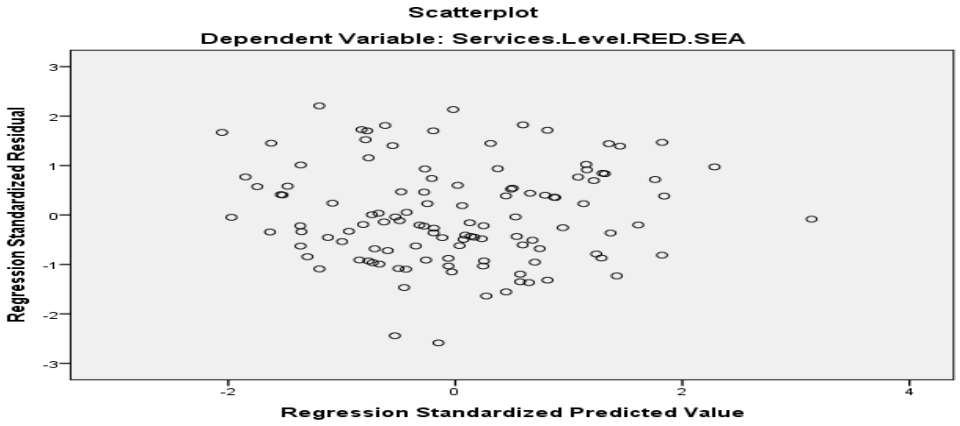
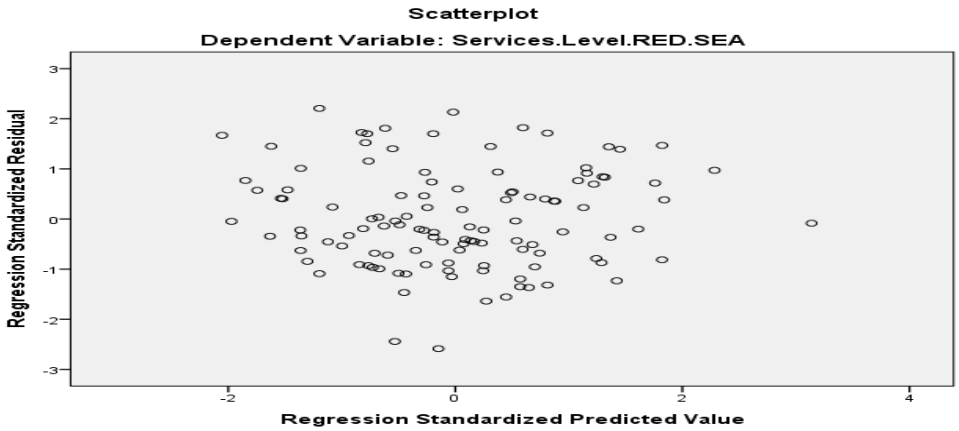


Figure 4: Checking Homoscedasticity for red sea model



From figures 3 and 4, the points are scattered randomly around the middle line (e=0). Hence, the two models have a valid Homoscedasticity assumption.

6. The Discussion

The Red Sea is a critical maritime route, accounting for around 10% of global trade. It is strategically positioned between Africa and Asia. Presently, the Red Sea facilitates over 12% of the world's seaborne cargo and 40% of trade between Asia and Europe. This significance underscores the Red Sea's vital role in international commerce, linking key markets and contributing to the global economy (Martin,2021).

The importance of the Egyptian ports located on the Red Sea further amplified by its proximity to major shipping lanes and ports, making it essential for the movement of goods and

resources across continents. Additionally, the geopolitical dynamics of the surrounding nations influence trade patterns and security measures in the area. This highlights the intense competition and strategic maneuvers among nations vying for influence over the Red Sea, as well as the recognition of the region's vital role in global trade and security dynamics. The investments in port infrastructure and military capabilities reflect the geopolitical significance of the Red Sea, making it a focal point for economic development (Meeter et al,2018)

By enhancing port infrastructure, the quality of services provided, enhancing the technology used, considering the competing ports when putting the pricing themes of the ports, the Egyptian government aims to bolster its economic interests while simultaneously projecting power in a region marked by intense geopolitical competition. These initiatives reflect concentrated effort to secure vital trade corridors, enhance maritime capabilities, and increase regional influence, positioning Egypt as key players in the evolving dynamics of the Red Sea and surrounding areas.

The Mediterranean Sea's strategic importance has grown dramatically over the last 25 years, as seen by a 477% growth in cargo flow via its ports from 1995 to 2018. Today, the Mediterranean region accounts for 20% of worldwide shipping, solidifying its status as an important link between Asia and Europe. With no plausible alternative route offering the same efficiency,

protecting this maritime corridor in the face of persistent security problems in the Persian Gulf will almost certainly become a vital security priority for both continents in the near future (SRM,2019)

The growing centrality of the Mediterranean and its ports offers significant economic prospects for both the region and the broader European and African markets it connects. These opportunities extend beyond the shipping industry to various sectors that thrive on well-developed, interconnected infrastructure. Egypt serves as a prime example, having placed its port system at the heart of its economic revitalization strategy.

The advent of containerization in the shipping industry, about a century ago, transformed the Mediterranean into a critical hub for global trade. Today, between 7% and 8% of the world's total cargo passes through the Suez Canal, underscoring the region's strategic importance as a mandatory passage for international shipping routes. This vital corridor links Europe, Asia, and Africa, solidifying the Mediterranean's central role in global commerce and amplifying the need to secure and develop its ports and maritime infrastructure. (Baccelli, Buonfanti, Ferrara & Zucchetti, 2015)

7. The Conclusion :

The main aim of this study is to identify the factors that are affecting the competitiveness for both the Egyptian ports located on the Mediterranean sea and those located on the Red sea, creating such an index helps to deeply recognize and to compare between

the determinants of the competitiveness for both those are located on the Mediterranean and those are located on the Red sea.

The study created the Competitiveness Index to evaluate the importance of pricing, the speedy services, the quality of services, technological advancement, the quality of the infrastructure on the competitiveness for the ports located on the Mediterranean and for those located on the Red sea for the (14) main services provided as important pillars to measure competitiveness.

The study found and for the index created the followings:

- Price importance has a significant effect on the competitiveness in both models Mediterranean and Red Sea.
- Speed Importance: results of the Mediterranean model show that a significant effect of speed on competitiveness on the Mediterranean but doesn't have a significant effect on competitiveness in the Egyptian Ports on the Red Sea.
- Quality Importance: results of the Red Sea model show that a significant effect of quality importance on the competitiveness, quality importance does have a significant effect on competitiveness in the Egyptian Ports for Mediterranean.
- Technology Development Importance: the results show that Technology Development Importance have a significant effect on competitiveness in the Egyptian Ports located on the Mediterranean and on the red sea.

- Infrastructure Importance: results of the Mediterranean model show that a significant effect of infrastructure on competitiveness on the Mediterranean. Also, infrastructure importance has a significant effect on competitiveness in the Egyptian Ports on the red sea.

8. The Recommendations:

The Egyptian ports located on the Mediterranean Sea are witnessing strong competition from different ports on the Mediterranean[3] . For those located on the Red Sea the competitive ports are mainly: Jebel Ali on the Arabian Gulf, Aqaba port in Jordan, Jeddah and Yanbu in Saudi Arabia, and Salalah in Oman. What distinguishes the competing ports to the Egyptian ports located on the Mediterranean or the Red Sea are the pricing system, the technological development, the quality of services and the speedy services .These are the determinants of the study of the paper and on which the Index had been created for the main (14) services provided at the Egyptian ports.

Accordingly, the followings recommended to be done:

- The establishment of a joint system between ports and shipping agents to recognize their needs and to evaluate the provided services.

[3] See Nawar,Z.M.(2024).

- The importance of the continuous planning and the enhancement to ports' infrastructure and the quality of services including technology development.
- The Egyptian government to increase the investments directed to the Egyptian ports to enhance the quality of services, these to include deepening water, establishing new docks, establishing container terminals, digitalising services, developing the technological infrastructure of ports, and dealing with the bureaucracy, and providing training to the employees.

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Appendix 1: The Survey Questions :
Section 1: Demographic Information

Distributed to marine agents

Participants' names

(Agent data is optional)

Marine agent name: ……..Company……nationality

Tel.:……

Check the ports usually used:

☐ Alexandria ☐ Ad Dakhilah	☐ Suez ☐ Safaga ☐ Nuweibaa	☐ East Port Said ☐ West Port Said ☐ Adabya ☐ Ain Sokhna	☐ Damietta

Type of Goods Transferred

☐ Vessels
☐ Liquid Cast
☐ Dry Cast
☐ General Goods
☐ Others

Please specify……

No. of visits to the Egyptian ports……..period of stay……

1- How long have you been working with marine ports subject of the research?

1- ☐ Less than one year

2- ☐ 1- 5 years

3- ☐ 6- 10 years

4- ☐ 11- 20 years

5- ☐ More than 20 years

2- No. of employees in the company:

Number of employees: ☐☐☐

Section 1: Please order the "Pricing" that are considered vital in receiving the services (in terms of importance, where 1 is the most important and 5 is the least important):

Service	1	2	3	4	5
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 2: Please order the "Speedy services " that are considered vital in receiving the services (in terms of importance, where 1 is the most important and 5 is the least important):

Service	1	2	3	4	5
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 3: Please order the "Quality of the services " that are considered vital in receiving the services (in terms of importance, where 1 is the most important and 5 is the least important):

Service	1	2	3	4	5
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 4: Please order the "Technological Advancement" that are considered vital in receiving the services (in terms of importance, where 1 is the most important and 5 is the least important):

Service	1	2	3	4	5
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 5: Please order the "Infrastructure" that are considered vital in receiving the services (in terms of importance, where 1 is the most important and 5 is the least important):

Service	1	2	3	4	5
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 6: How would you rate the level of the following services provided at the Egyptian Ports located on the Mediterranean Sea compared with other international ports located on the Mediterranean sea.

Service	Very poor (1)	poor (2)	Medium (3)	Good (4)	Very good (5)
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					
Loading/unloading					

Section 7: How would you rate the level of the following services provided at the Egyptian Ports located on the Red Sea compared with other international ports located on the Red Sea :

Service	Very poor (1)	poor (2)	Medium (3)	Good (4)	Very good (5)
Pilotage					
Towage					
Mooring					
Quarantine					
Docking					
Marine inspection					
Water supply					
Waste removal					
Water drainage					
Food Supply					
Spare parts Supply					
Repairs and maintenance					
Fuel supply					