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Smart Green Blue
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INVESTIGATING THE IMPACT OF MARITIME TRADE NEW TRENDS ON THE EGYPTIAN MARITIME PERFORMANCE

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The Importance of Maritime Transport Sector

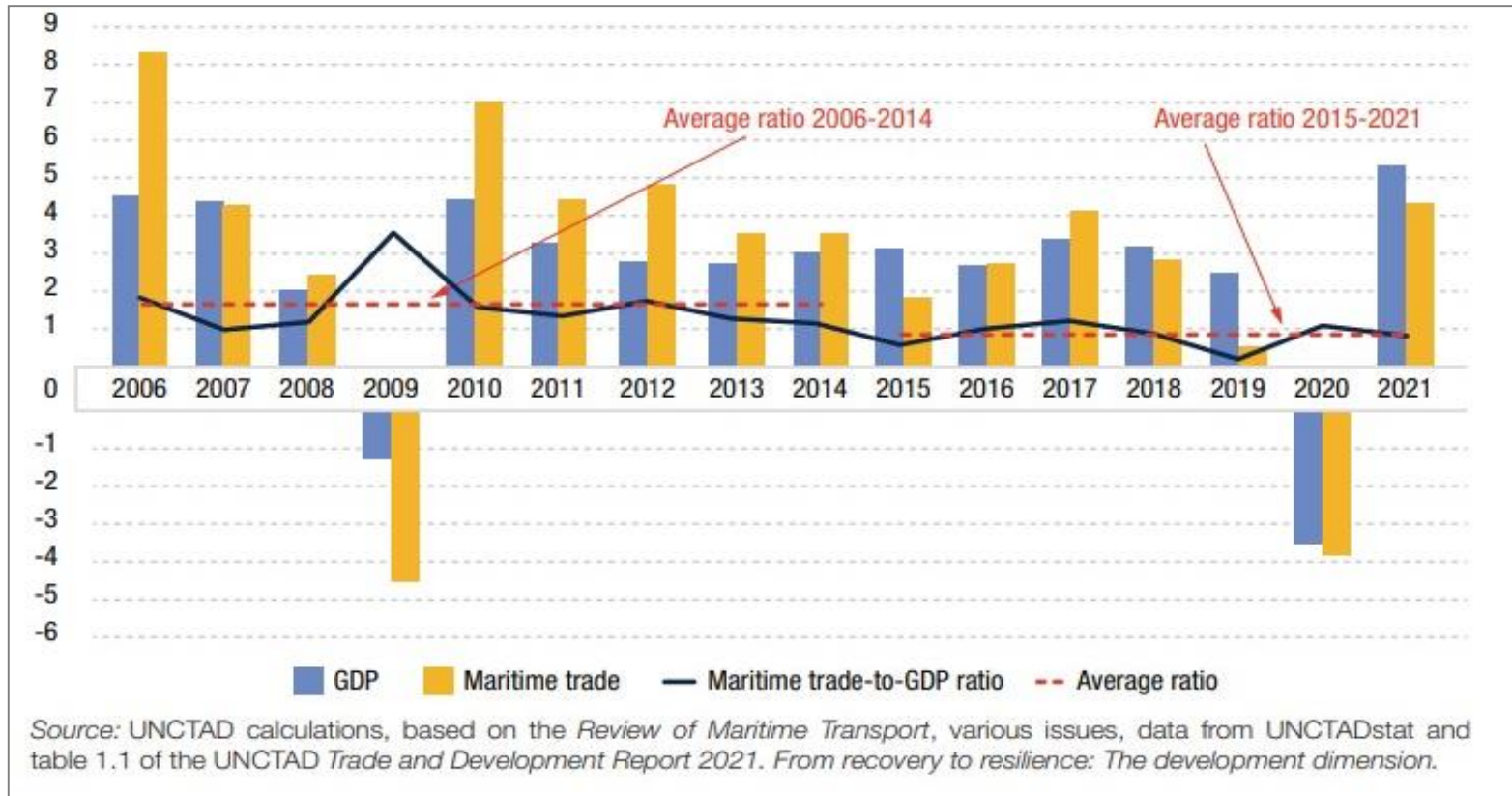
- Maritime transport is a pillar of global trade.
- The economy is generally impacted by maritime transport and its related activities.
- Assemblage of industries depend on maritime transport, and a variety of resources are transported to manufacturing hubs.

Egypt geographical location allow it to be a major player in global trade.





Maritime trade-to-GDP ratio



Source: UNCTAD secrétariat

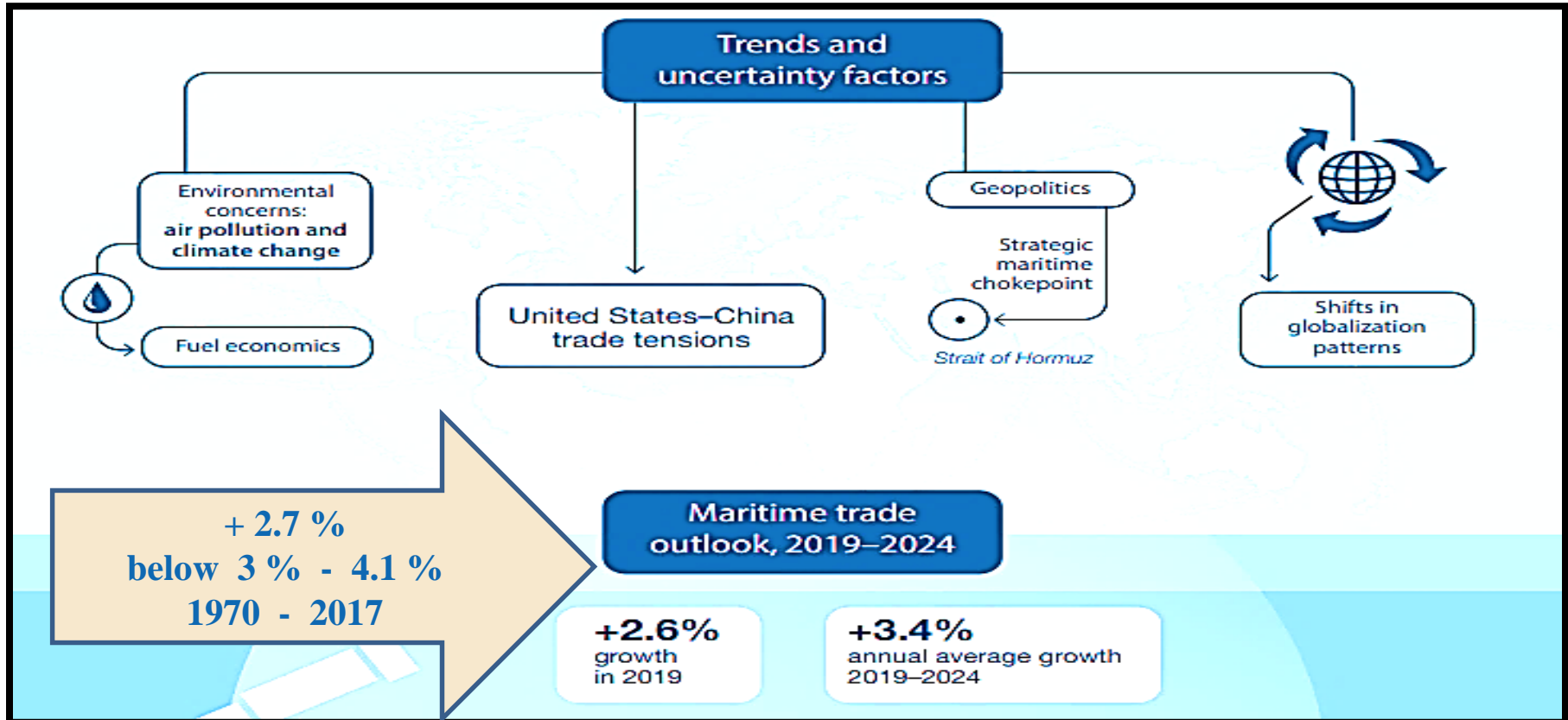


Performance Measurement of Maritime Transport

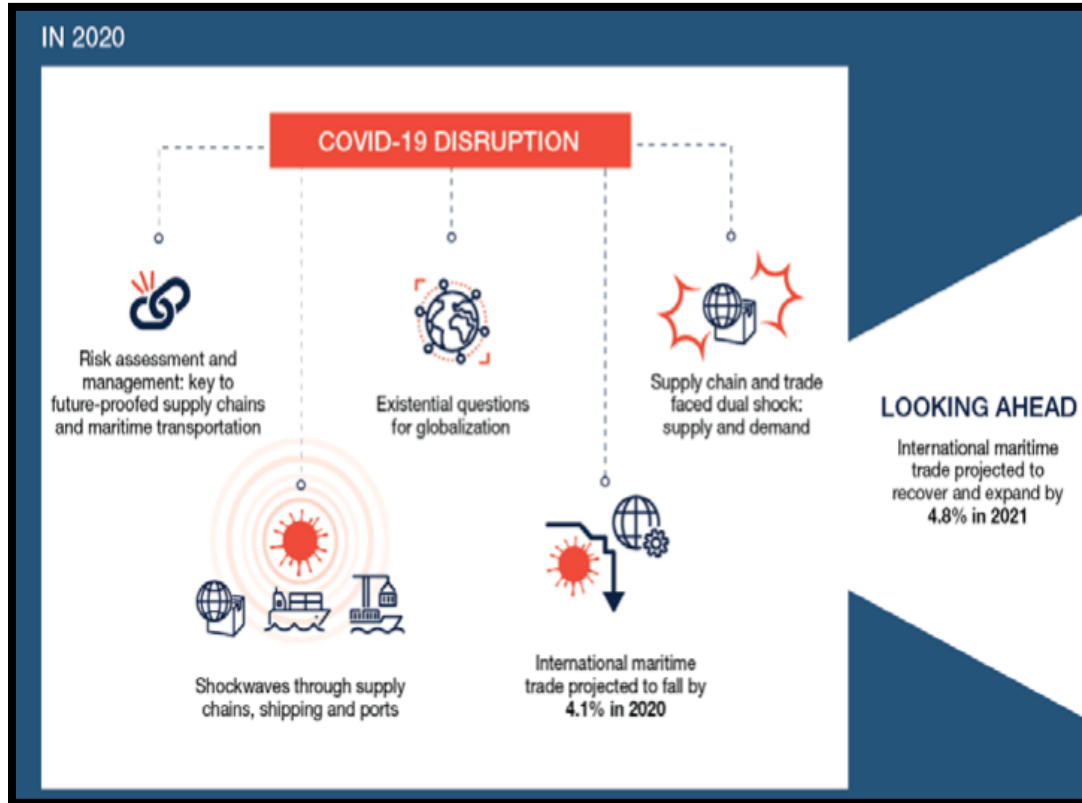
- **UNCTAD Liner Shipping Connectivity Index (LSCI)**
- **The Logistics Performance Index (LPI)**
- **The World Ports Sustainability Program (WPSP)**
- **The Project of European Union sponsored by the European Sea Ports Organization (ESPO) – called “PPRISM”**

The study shows the significant impact of those trends on the maritime sector in terms of expenditures, dwell time, handling rates, average waiting time, penalty fees/charges, delays, and other key performance indicators (KPIs).

New trends and changes dropped the growth in international maritime trade



New Trends that reshape the maritime transport landscape

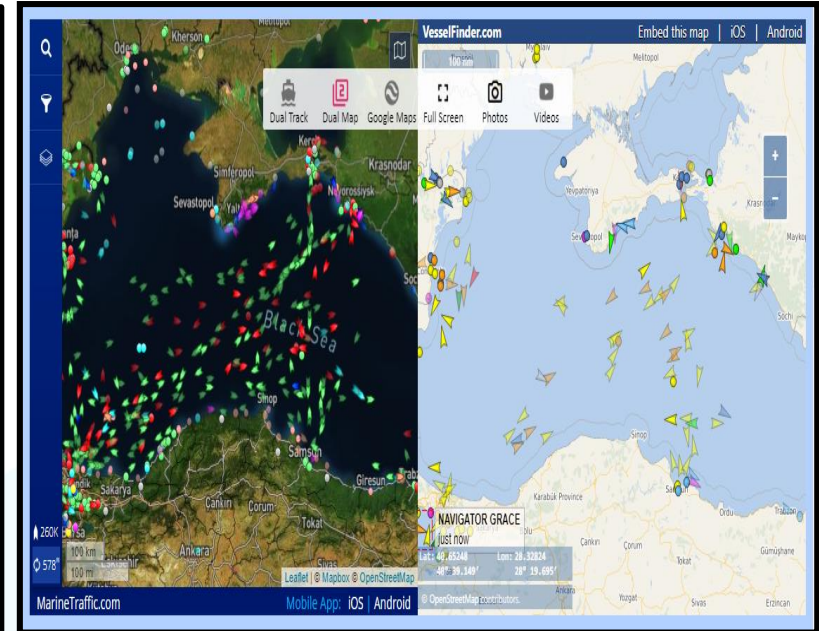


- Threat the public health.
- Economic & social disruptions.
- Asserted the global interdependency of nations.
- Set new trends that reshape the maritime transport landscape.
- Show the importance of maritime transport as an essential sector during crisis, recovery and normality.

New Trends that reshape the maritime transport landscape

- Geopolitical changes in Black Sea region from “Russian-Ukrainian war” disrupt the shipping, and exacerbate the ongoing supply chain disruption, port congestion & crew crises of Covid.
- Clarkson's: the impacts of the war will create inefficiencies in the maritime transport system.

- Serious supply crisis (ports in the Black Sea) .
- The future of the trade is worrisome, as:
 - i. Higher costs, fewer capacity and delay.
 - ii. Both countries hold more than ¼ of global trade of wheat and 1/5 of corn.
- 70% of Europe needs of imported from Russia.
- The operational problems as 15% of the world’s seafarers being either Russian or Ukrainian.



Source: AIS Tracking maps 2022

Findings from literature

Maritime Transport New Trends

- **Climate Change**
- **Port disruptions**
- **Structural shifts in globalization**
- **External disruptions**
- **Digitalization**





Research Objectives

- **To investigate the new trends that impact the Egyptian maritime transport performance.**
- **To describe the impact of those new trends on the Egyptian maritime transport sector in terms of key performance indicators with the implementation of digitization practices in Egyptian maritime sector.**
- **To propose recommendations for the stakeholders of maritime transport sector to minimize the impact of those new trends and enhance the digitization practices in Egyptian maritime sector.**





Literature Review

- **Published literature such as books, conference proceedings, and literature obtained from electronic sources.**
- **Search engines for literature such as Google Scholar, Science Direct, and Springer Link databases.**

Consequently, a number of academic publications were used to conduct a review of previous studies during the period from 2006 to 2023.

according to
topics





Climate change

Climate Change as defined by the United Nations Framework Convention on Climate Change (UNFCCC) is a variation in climate that modifies the composition of the global atmosphere and is added to natural climate variability seen over a comparable period of time and that is applied by the attributed activities of humans either directly or indirectly.

Studies:

Sarwar (2006) - Solaymani et al., (2015) - Zittis et al., (2023) - Li et al., (2022)





Port Disruption

Seaports are platforms within the global supply chains and production networks. Ports have varied functions and their impacts on supply chains are different. These chains are highly dynamic in reacting with global trade patterns, consumer preferences, and advances in supply chain management and information technology.

Port disruption impacted the maritime supply chains, as agents and different stakeholders affected directly or indirectly by a port disruption.

Studies:

Koks et al., (2022) - Lam & Yip (2012) - Notteboom, et al., (2022)



Structural shift in globalization

“Globalization” is one of the earliest and most prevalent issues that refers to the expansion and widening of international economic exchange relationships of one country with others in the world, as indicated by trade and foreign direct investment (FDI) flows, as well as other forms of exchanges like capital, people, technology, ideas, and efficient institutional practices. An essential component of successful development is structural change. The patterns of structural change varied among regions and countries during the period 1985 - 2015 due to globalization and variation in resources.

Studies:

(Dębicka et al., (2019) - Corbett & Winebrake, (2008) - Almklova & Lamvikb (2018)

External disruptions

The unanticipated shocks have affected variables related to various aspects of human life and their interaction, and that necessitate specific and adjusted analysis.

Disruption risks sourcing from natural disasters, political instability, terrorist attack, microeconomics uncertainties, social uncertainties, diseases, and pandemics.

COVID-19 pandemic - Russian Ukraine war

Studies:

Gu & Liu (2023) - Deeb & Leonardo (2023) - Kanrak et al., (2023) - Chua et al., (2022)

Hotheen attacks

Studies:

(Raydan, 2023) - (Awad, 2018) - (Alexandre, 2021) - (Khaldoon, 2019)



Digitalization

Digitalization is the incorporation of digital technology into daily life via the transformation of everything that can be digitized.

Recent studies investigated the role of digitalization to limit the severe impact of external disruptions and other new trends on the sector performance.

Studies:

(Tran et al., (2021) - Andresen & Björn (2022) - UNCTAD in 2019



Research Methodology

International reports



Survey




Interview



- Mixed “Descriptive – Exploratory” Research.
- Qualitative research (Semi-structured interviews).
- The researcher scope is Egyptian maritime transport sector.
- **For future work, the researchers are going to conduct a quantitative analysis by using a questionnaire tool. The sample of the study is chosen based on the Convenient Sampling approach and targeting (700) participants.**




Results and Discussion

- **Interview manuscripts involves examining the responses to open-ended interview questions.**
 - **The respondents freely expressed their ideas, some of which related to their previous experiences of industry-based learning.**
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Climate Change

- It represents **a great challenge on the coastal areas** of deltas with sea water.
 - The impact varies between **low and moderate**, as several ports closed, and some port traffic stops due to weather conditions and the related disruption.
 - The climate changes is **very low** in terms of increase of expenditures for equipment and labor, ships dwell time, number of tugboats, disruption in logistic services, damage of the navigational aids, physical damage, and delays.
 - The government helps in the adaptation to climate change through **Egypt National Climate Change Strategy (NCCS) 2050** .
 - Some ports carried out some actions as; **signing agreements** with the international entities, and other ports increase the **construction of breakwaters**.
- 




Globalization

- Free exchange of goods and services helped in **increasing the handling rates**.
 - **Change of rules** impacted the market and affects performance.
 - Integration among countries resulted in **increasing the cooperation**.
 - Effective **exchange of information** allows frequent and effective actions.
 - Increasing the quality of services and reducing the time of procedures (**NAFEZA**).
 - Providing incentives, competitive prices, and reducing the time of the port's service.
 - Allow the **free movement of human and financial resources** that includes the working of public and private sector together for effective operation.
 - Adopting advanced **technology**.
- 



Disruption

- There are **risk management departments** concerned with the operational risks and security that determine the disruption, threats, categorize them, and set different scenarios to deal with the internal and external risks and disruption.
 - They successfully managed supply chain disruptions in terms of:
 - ✓ Working during crises, developing the **automation of transactions**.
 - ✓ **Electronic payments** for services facilitate the workflow.
 - ✓ **Analyzing data** related to handling rates (Loading and unloading rates), average waiting time, penalty fees/charges, time to release goods at the port.
 - ✓ Activating the **key performance indicator** systems with details to measure performance and determine the extent of success.
- 




Disruption

- The internal disruption impacts the performance in terms of:
 - ✓ Decrease in **handling rate**, productivity, and revenues.
 - ✓ **Overall physical damage** and interruptions.
 - ✓ Increase of **equipment's expenditures, ships dwell time and delays**, and the disruption in logistic services related to reduction of **labor**.
- There are some challenges in mitigating internal risk and disruptions as:
 - ✓ Lack of methodology for **tax and customs exemptions**.
 - ✓ **Global political and economic changes** affect global trade and port activities.
 - ✓ **Modern technology** in operation and logistical services became mandatory.



Disruption

- Severe disruption because of Covid-19 and Russian Ukraine war, as:
 - ✓ a substantial **decrease in passenger transport** in 2020, then in 2022
 - ✓ geopolitical **changes in the movement of goods** around the world
 - ✓ Covid-19 global restrictions and quarantine, ports were most affected by the decrease in **ship traffic, passenger traffic, and volumes of cargo**.
 - ✓ Companies ensure considerable impact on the supply chain disruptions specially from the logistics side including **the supply and shipping delays**.
 - ✓ The **total revenue** of port and transport sector declines and the **price of port services** increases with the global prices, as operation during lockdown increases the costs.
 - ✓ Private companies operating in the port had aspects of their **business continuity plans** (including new sanitary protocols and processes).
- 

Disruption

- Either regional or international war have a notable impact on the Egyptian ports.
- Of the positive impacts of the pandemic and the Russian-Ukrainian war:
 - ✓ Adopting modern **technology**.
 - ✓ Applying standards to achieve the transition to a **green port**.
 - ✓ Some ports **review the plans** to cope with Covid-19 impact and succeeded in achieving the highest handling rate.
- Egypt ports also impacted by other external disruption as:
 - ✓ Massive explosion in Beirut's port -
 - ✓ Aqaba port accident
 - ✓ Hotheen attacks

Digitalization:

- There are **digitalized business processes**.
- Effectiveness of **communication** helps in work implementation and accreditation of just-in-time system (JIT).
- The port community has an **integration system** to exchange data.
- Egypt ports activate the national platform **Misr Technology Services** “MTS”.
- The Government made mandatory **Advance Cargo Information** (ACI) declarations with its new Customs law #207 for all cargo in 2021.
- Using **NAFEZA** as the block chain document transfer gateway service provider

Digitalization:

- The majority of ports have **training centers** that were established with a highly qualified and experienced team according to international standards under the affiliation of the General Administration for Training in the port.
- Employees participate in the **adaptation of digital technologies** through periodical meetings between the port authority and the working companies to listen to their ideas concerning the upgrading of working system.
- There are **cooperation protocols** with specialists and international organizations.
- They regularly invest in **modern technologies** to develop their business and services in all processes and procedures to **reduce paperwork and facilitate procedures.**

Conclusion, Recommendations, Limitations and Future Research

Conclusion:

Filling the gap in the literature, and it gives insights to the policy makers and stakeholders on the development of the maritime transport sector in Egypt.

Based on the interview survey, it was found that the new trends impact the performance in term of ports handling rates, equipment's expenditures, ships dwell time and delays. As there is an impact in term of the use of advanced technology.

Limitation:

The main limitation of this study, the research scope was the Egyptian maritime sector with limited number of interviewees, conclusions drawn may have limited applicability to other nations with different economic, geographic, and institutional contexts.





Recommendations

- **Perform a comparative assessment of adaptation strategies across Egyptian ports to identify best practices and opportunities to strengthen adaptive governance.**
- **Monitor key economic, social, and environmental indicators related to maritime supply chains over an extended time horizon to detect impacts and support ongoing risk assessment.**
- **Investigate how global shifts toward protectionism and reshoring impact Egypt's role in global shipping and logistics networks.**
- **Compare Egypt's maritime development policies and performance indicators to regional and global benchmarks to identify areas for strategic development.**



Recommendations

- **Partner with international organizations to leverage resources that support port modernization, and regional cooperation on issues like piracy and rescue.**
- **Evaluate policy options to enhance supply chain resilience through tools like emergency response coordination, infrastructure upgrades, fuel efficiency standards, and workforce training. A national adaptation strategy could help integrate such actions.**
- **Analyze the vulnerabilities and gaps to provide guidance for enhancing resilience to external disruptions like piracy, terrorism, and cyber-attacks.**
- **Conduct cost-benefit analyses to weigh adaptation strategies, such as fleet or port infrastructure improvements to adjust to emerging trends.**





Future Research

There are another trends and disruptions affect the Egyptian maritime transport sector, such as geopolitics, political instability, terrorism, and piracy.

Research Implications

The contribution of this study is to empirically investigate the impact of key new trends and changes (climate change, port disruption, structural shift in globalization, external disruption) on the maritime transport sector performance with moderation role of digitalization, and how Egypt adapts with the new changes and trends.

Also, the study highlights the role digitalization in decreasing the impact of those changes on maritime transport performance as to operate effectively and efficiently.





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Thank You

