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Regulatory Enforcement, Gender Quotas, and Women on Board: Evolution and Firm Performance

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Introduction

One of Sustainable Development Goals (SDGs) established by the United Nations in 2015 is goal 5 (SDG 5 or global goal 5) concerns gender equality. Target 5.5 (Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life) is seen as an important cornerstone of gender equality. Furthermore, indicator 5.5.2 considers the proportion of women in managerial positions as a means towards achieving the global goal 5.

So, there are several questions that deserve answers: Does gender diversity matter? And what are its implications on regulatory environment, and its effects on firm performance? The easiest to answer of these three questions is probably the first, since there is bulk of theoretical arguments and several empirical findings that show that companies that enjoy an acceptable level of board diversity, in terms of women participations on boards, tend to be more efficient and more profitable than those with less diversity. The second question is perhaps the most interesting because it has, recently, spawned rich actions taken by different policymakers and regulators to impose women quotas on boards, mainly for publicly traded companies. The upshot of these actions is to empower women economically, on the ground that women participation in economic activities and decision-making will have a positive impact on the economy at large. What makes this finding interesting is its implications for the third question, since there is no consensus in the literature and empirical evidence on the impact of women on boards on firm performance. As a result, one could conclude that gender diversity, in terms of women participation on boards, or the lack of it is immaterial to firm performance.

In fact, corporate governance can best be interpreted as the set of mechanisms—both institutional and market-based—that induce self-interested managers (controllers of the firm) to make decisions that maximize the value of the firm to its shareholders (owners of the firm). The aim of these mechanisms, of course, is to reduce the agency costs that arise from the principle-agent problem, which could be internal and/or external in nature.

With regard to internal mechanisms, they deal with several issues such as the ownership structure or the degree at which ownership by managers obviates the trade-off between alignment and entrenchment effects. Another important internal mechanism is the composition of the board of directors, such as the distinction between the chief executive officer (CEO) and the chairperson, and the proportion of independent outsiders in the board. Recently, the issue of gender diversity, in terms of the proportion of women on boards, became an important element of internal corporate governance mechanism and it attracts researchers to understand its impact on firm performance.

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External mechanisms, on the other hand, rely among other things on the legal/regulatory system.

In this venue, we find number of actions in form of legal/regulatory enforcements regarding women quotas on boards, which will change the landscape of board composition and the way boards are functioning. The ultimate impact of the corporate governance system on firm performance is subject to debate among scholars. The principle of equality of treatment is the driver behind the desire to achieve proportionate gender representation on boards, which requires comparable situations to be treated in the same manner and prohibits direct and indirect discrimination (Watson, 1995). Equality of treatment refers to either equality of opportunity or equality of outcome (McCoy Family Center for Ethics in Society).

Equality of opportunity requires providing everyone with the same opportunity to attain what they desire (UN, 2016a), while equality of outcome requires every individual to possess an equal share of outcomes such as goods or positions (UN, 2016b). One approach taken by governments/regulators to achieve gender equality on boards is to put in place legislation requiring a set quota of female representation on boards. The quota system is simply what we have illustrated above regarding the concept of equality of outcome approach, which is concerned with the result rather than the means of achieving such a result. Terjesen, et al. (2015) indicate that ten countries have imposed quotas for women representation on board for publicly traded companies and/or state-owned enterprise, ranging from 33 to 50 %. Fifteen other countries have introduced non-binding gender quotas in their corporate governance codes enforcing a comply or explain principle.

They argue that countries that adopt gender quotas tend to have three key institutional factors: Female labor market and gendered welfare state provisions, left-leaning political government coalitions, and path dependent policy initiatives for gender equality, both in the public realm as well as in the corporate domain.

The matter of the fact is that countless other countries are in the process of debating, developing, and approving legislation around gender quotas in boards and this is not limited to developed market, but there are several emerging markets that have done so. Egypt's sustainable development goal 2030 vision targets 30 percent of women in senior management and leadership positions by the year 2030. The financial regulatory authority (FRA)—the single regulator for non-bank financial institutions (NBFIs) 4 in addition to stock exchange—issued a series of decrees to achieve this vision for listed companies as well as NBFIs. In the fourth quarter of 2019, FRA issued two decrees (No. 123 and 124 of 2019) that amend listing and delisting rules to ensure women representation on boards of listed companies. That is besides an amendment to licensing rules and regulations of NBFIs in a way that guarantees female representation on corporate boards. Both decrees impose the rule of at least one woman on board of these companies.

The FRA decrees were based on the ground that achieving equality between women and men in all civil, political, economic, social, and cultural rights is mandated by the state in accordance with the provisions of Article 11 of the Egyptian Constitution of 2014, and the state guarantees females the right to assume public and senior management positions. Two years later, the FRA amended the above-mentioned two decrees and replaced them with decrees (No. 109 and 110 of 2021) stipulating that listed companies as well as NBFIs should have at least 25 percent women on board or two women. But why are policymakers and regulators of developed and emerging markets, alike, engaged in supporting women economic empowerment in general and woman participation on boards in particular? The phenomena of gender diversity in the board suggests that women consider more ethical and social behaviors than men, so having gender diversity in the board will assure better board performance in terms of control and strategic role (Mahmood et al., 2018; Kang et al., 2010). It is also argued that women, by nature, can better understand customers' needs and behaviors, so having them on board might provide more

insights about the firms' opportunities in meeting their customers' needs (Ahmadi et al. 2018). In addition, gender diversity is expected to lead to support alleviates agency issues and could encourage firm innovation by ensuring effective supervision (Chen et al., 2018). Furthermore, several other academic studies claim that women on boards can improve the diversity of opinions in the boardroom; provide the woman role models, mentors and leadership style; bring strategic input to the board of directors; contribute to reducing the level of conflict of interests; introduce better multi-tasking skills, methods of risk management and communication abilities as compared to their male counterparts; and influence the quality of the decision-making process (Bernardi et al., 2002; Carter et al., 2003; Fehr-Duda et al., 2006; Nielsen and Huse, 2010). Empirically, and despite a relatively large literature examining the impact of women on boards on firm performance, the evidence is not very clear.

Some studies find a positive impact, others a negative one and still others with no impact at all. In a seminal paper, Post and Byron (2014) try to find an answer so as to how to reconcile these conflicting findings. They statistically combined the findings from 140 studies and examined whether the variables in these findings could be attributed to firms' legal/regulatory and socio-cultural contexts. The study finds that women representation on boards is more positively related to accounting returns in countries with stronger shareholder protections.

They argue that shareholder protections might motivate boards to use the different knowledge, experience, and values that each member brings to the board. As for the impact of women on boards on market value of firms, they conclude that the relationship is positive in countries with greater gender parity (and negative in countries with low gender parity), although, on average, the relationship is near-zero. They argue that investors' evaluations of future earnings of firms with more women on boards might be influenced by societal gender differences in human capital.

References

[1] Ahmadi, A., Nakaa, N. and Bouri, A. (2018) '*Chief Executive Officer attributes, board structures, gender diversity and firm performance among French CAC 40 listed firms*', *Research in International Business and Finance*, 44. Available at: https://doi.org/10.1016/j.ribaf.2017.07.083.

[2] Bernardi, R.A., Bean, D.F. and Weippert, K.M. (2002) 'Signaling gender diversity through annual report pictures: A research note on image management', *Accounting, Auditing & Accountability Journal*, 15(4). Available at: https://doi.org/10.1108/09513570210441440.

[3] Carter, D.A., Simkins, B.J. and Simpson, W.G. (2003) 'Corporate governance, board diversity, and firm value', *Financial Review*, 38(1). Available at: https://doi.org/10.1111/1540-6288.00034.

[4] Chen, J., Leung, W.S. and Evans, K.P. (2018) 'Female board representation, corporate innovation and firm performance', *Journal of Empirical Finance*, 48. Available at: https://doi.org/10.1016/j.jempfin.2018.07.003.

[5] Fehr-Duda, H., de Gennaro, M. and Schubert, R. (2006) '*Gender, financial risk, and probability weights*', *Theory and Decision*, 60(2–3). Available at: https://doi.org/10.1007/s11238-005-4590-0.

[6] Mahmood, Z. et al. (2018) 'Does corporate governance affect sustainability disclosure? A mixed methods study', *Sustainability (Switzerland)*, 10(1). Available at: https://doi.org/10.3390/su10010207.

[7] Mastella, M. et al. (2021) 'Board gender diversity: performance and risk of Brazilian firms', *Gender in Management*, 36(4). Available at: https://doi.org/10.1108/GM-06-2019-0088.

[8] McCoy Family Center for Ethics in Society (2016) 'Equality of Outcome. Equality of Opportunity and Education, McCoy Family Center for Ethics in Society'. *Available at: https://edeq.stanford.edu/sections/section-1-equality-opportunity-and-alternatives/equality-outcome* (Accessed: 24 September 2022).

[9] Nielsen, S. and Huse, M. (2010) 'Women directors' contribution to board decision-making and strategic involvement: The role of equality perception', *European Management Review*, 7(1). Available at: https://doi.org/10.1057/emr.2009.27.

[10] Post, C. and Byron, K. (2015) 'Women on boards and firm financial performance: A meta-analysis', *Academy of Management Journal*, 58(5). Available at: https://doi.org/10.5465/amj.2013.0319.

[11] Terjesen, S., Aguilera, R. v. and Lorenz, R. (2015) 'Legislating a Woman's Seat on the Board: Institutional Factors Driving Gender Quotas for Boards of Directors', *Journal of Business Ethics*, 128(2). Available at: https://doi.org/10.1007/s10551-014-2083-1.

[12] United Nations (2016a) *Conve*ntion on the Elimination of All Forms of Discrimination against Women, United Nations.

[13] United Nations (2016b) Sustainable development goals: Metadata, Sustainable Development Goals.

[14] Watson, P. (1995) 'Equality of treatment: A variable concept?', *Industrial Law Journal*, 24(1). Available at: https://doi.org/10.1093/ilj/24.1.33.

Biography

Currently, Mohamed Omran is a Professor of Finance at the Faculty of Management and Technology at the Arab Academy for Science and Technology. He has held the position of Chairman of the Stock Exchange since 2017 till 2022, and he held the position of Vice-President of the Insurance Holding Company for Operations Affairs from October 2010 until September 2011, and he served as Vice-President of the Egyptian Stock Exchange for 4 years, in From 2006 to 2010, he obtained a Doctor of Philosophy in Finance in 1999 from the University of Plymouth in the United Kingdom, and then worked as a visiting professor in many universities and research centers such as the University of Plymouth in the United Kingdom, the University of Oklahoma in the United States, the World Bank, Laville University in Canada and the University of Vasa in Finland.

Dr. Omran spent several years as an economist at the Arab Monetary Fund in Abu Dhabi and the International Monetary Fund in Washington, and worked as an advisor to the Egyptian Minister of Investment and as the acting executive director of the Egyptian Center of Directors. and research awards.

He also received a Fulbright grant and is a Research Fellow at the Economic Research Forum. He has arbitrated for a large number of international refereed journals in the field of economics and finance.

Dr. Omran specializes in financial markets, corporate governance, corporate finance, and privatization with a focus on the Middle East. He has written and participated in nearly 40 scientific papers, and his research has been published in many international journals.

He held the position of Chairman of the Egyptian Stock Exchange from September 2011 until the end of June 2013.

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SWOT Analysis on the Importance of Egypt and Sudan Logistics Transportation Networks: A Systematic Literature Review

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Abstract

Purpose: *The aim of this research is to illustrate systematic literature review, investigating the importance of Egypt and Sudan cooperation in terms of logistics and transport networks through conducting a SWOT analysis to determine the main opportunities and barriers behind this cooperation and how to overcome these barriers.*

Design/Methodology/Approach: *In order to highlight Egypt and Sudan relations to offer and integrate various transportation networks and methods, a systematic literature review of 34 published research papers on Egypt and Sudan connectivity was conducted over 18 years. The main goal was to report on the most important research studies that matched the research keywords across multiple databases, report the research gap by displaying the research theoretical framework, and state what other researchers should consider. Consequential is the strategic analytical tool, SWOT analysis, which is based on the results of the systematic review analysis to evaluate internal strengths and weaknesses as well as external opportunities and threats that Egypt should address in integrating with Sudan.*

Findings: *It was determined that an insufficient number of research investigations has used the waterway connection to impede the flow of commerce to ascertain multimodal transportation. There has also been no additional investigation into the border terminals and route networks between Egypt and Sudan, which could potentially help in the enhancement of the countries' import and export operations. Taking into consideration the main results and variables of the study, that should be tested in further studies, it was found that enhancing activities, services, and hubs may be beneficial to the transportation networks, seaports, and logistics networks that surround both nations.*

Research Implications/Limitations: *The current research presents a narrative and systematic representation of logistics transportation networks resulting in pointing up the research theoretical framework, then a SWOT analysis to highlight the main strength points and opportunities for Egypt and Sudan for their transport and*

logistics development and for attaining greater benefits for both nations. Nevertheless, achieving this goal requires additional research and fact-finding.

Originality: *Through identifying the effects of collaboration on the transport sector by enhancing inter-modality services and logistics services between the two nations, the research provides a significant addition to the literature, as there were a lack of studies investigating the cooperation between Egypt and Sudan and limited studies highlighting its importance. The theoretical models and findings from actual investigations developed by the researchers will aid in the infrastructure of transport networks connecting Egypt and Sudan, but this will necessitate extensive research and testing.*

Keywords: *Egypt and Sudan, Multimodal, Logistics Centers/Hubs, Regional Integration and Transport Networks.*

Introduction

Egypt's logistics profile is critical to the country's economic recovery. Aside from its strategic location, Egypt has robust aviation and maritime networks, but the country's utilities and transportation infrastructure still need to be improved. Long-term, Egypt's logistics profile appears optimistic, as the government's efforts to reform the economy have attracted essential investments. The transportation industry is critical to Egypt's economic prosperity (Abd Ellah, 2020). All sectors of the national economy rely on transportation services and facilities to connect production and consumption markets, as well as access to raw materials, services, and equipment. The government and the ministry wish to upgrade Egyptian transportation systems in order to stay up with worldwide technical breakthroughs and to give exemplary service to Egyptian citizens on roads, railroads, and airports. A change in government legislation now permits semi-government entities, such as the Egyptian Railways Company, to issue bonds, increasing the volume of investment (*Egypt Independent*, 2017).

Transport corridors to and from seaports in several countries facilitate trade with global markets. As a result, the physical transport networks in the Nile region have a relatively low level of integration. The countries mostly export agricultural items with minimal added value. Some countries have found or are presently utilizing vast quantities of mineral resources, such as oil, natural gas, and precious stones. These are (or will be) exported using the present modes of transportation. Over 21,900 kilometers of pipelines delivering condensate, gas, oil, and refined petroleum products are added to the region's bulk transportation network. Over 60% of the basin's present pipelines are located in Egypt (UNCTAD, 2020).

The current paper starts by illustrating narrative literature review, presenting the potentiality of Egyptian-Sudanese relations, the integrated transport and multimodal transportation significance and explaining the importance of the integrated chain of multimodal transportation and logistics hubs and how they will affect the trade and globalization within continents. Subsequently, following the systematic literature review, the research methodology and the results and discussion are presented. Afterwards, the research presents the theoretical framework and conducts the SWOT analysis, summarizes the paper, illustrates the conclusions, and discusses limitations and research perspectives.

The Current Situation of the Egyptian- Sudanese Relations

Industry and commerce have a significant impact on the nation's social and economic prosperity, and boosting them is a major priority, explaining why the Egyptian government prioritizes transportation projects as part of its ambitious plan to provide and integrate various transportation

networks and means to serve the comprehensive development process and achieve a balance between citizens' social, economic, and environmental needs. Great accomplishments and massive projects have occurred in Egypt's transportation sector since June 2014, when it demonstrated a special interest in transportation as one of the most important tools for implementing Egypt's development plans. A more efficient transportation system would not only assist Egypt in achieving its goal of increasing trade with foreign markets, but it would also assist Egypt in managing the rapid growth of its metropolitan areas (Leat and El-Kot, 2022). To achieve these goals, private investments must be increased. It is also important to note the difficulties in navigation in Sudan, particularly on the Nile River. Because it provides the most reliable transit link from Sudan to South Sudan during the wet season, the Sudan-South Sudan reach is one of the most important Nile river routes. Private operators are rapidly expanding, increasing total shipping capacity.

The White Nile to the south of Khartoum features shallow sections that limit barge carrying capacity, especially during low water periods, and the river has sharp bends. Most of these southern barriers were eliminated as part of the oil exploration and development project, which dug the White Nile shoals and built navigational beacons from Kusti to Bentiu. The spread of water hyacinth, which impedes traffic, has become a greater impediment. Man-made features, most notably the Jabel-Auliadamon the White Nile, have also placed constraints (about forty km from Khartoum). This dam includes locks, but they have not always operated effectively, and the river between Khartoum and Kusti, a railroad crossing 319 kilometers upstream, has not been used much. In 1983, just two sections of the Nile had regular commercial transportation services (OHCHR, 2020).

The White Nile's 1,436-kilometer stretch from Kusti to Juba (known as the Southern Reach: Kosti, Renk, Malakal, Malakal, Shambe, Bor, Mongalla Terakeka, and Juba) provide the country's only normally functional transportation link between its center and southern regions. This reach is often used all year, despite the fact that it is impeded by non-functional navigation aids, shifting sand, shallow waters, and exposed rocks. Almost all travel, and certainly organized traffic, were halted in 1984. River traffic south of Kusti was not resumed by mid-1991, except for a few heavily armed and guarded convoys (OHCHR, 2020).

Due to the privatization of the River Transportation Authority in Sudan and South Sudan, private firms are now competing to develop and run the river transportation system and river ports. The Port of Kosti is a prime example of Sudan's privatization programmer. Furthermore, while the government owns the present river ports in South Sudan, private entities are increasingly investing in in-land ports linked to river ports. On the White Nile, the main river ports in Sudan and South Sudan are Kosti, Malakal, and Juba, which offer the quickest transit time for barges travelling upstream (south) from Kosti to Juba as well as the quickest transit time for barges travelling downstream (north) from Juba to Kosti (Ranganathan and Garmendia, 2011).

Kosti Port is connected to Khartoum, Port Sudan, and other important Sudanese cities via rail and asphalt road. It has an 800-meter shoreline as well as a 115-meter vertical masonry quay with mooring rings and freight handling crane track. The rail siding adjacent to the dock is out of service. Although there is an RTC dockyard for small to medium-sized boat repairs, replacement parts and maintenance have been difficult to get.

Malakal Port is open all year, has a cement pier, is silt-free, and measures 300 meters. Malakal does not have any barge maintenance facilities.

Juba Port, The River Transport Corporation (RTC) provides barge services because no private companies offer regular voyages to Juba. Barges now travel in convoy from Kosti to Juba, and ports can only accommodate two barges at a time. Juba's old port is no longer functioning due to silting, and Juba's new port lacks infrastructure. The route from Kosti to Juba is seasonal and is determined by the weight of the barge. Due to low water levels, barges must

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occasionally be partially offloaded in Terakeka.

It is the fundamental national strategy to stimulate industries by increasing trade links with other areas of the world and securing more firm assurances of market access to the larger markets. This method demonstrates a deep engagement of the economy in international free markets in Eastern Mediterranean and African countries. As domestic products face strong quality competition on international markets, exports of materials/products are cruelly scrutinized in terms of market price competitiveness and timely delivery. Globalization and technical improvements have produced a commercial atmosphere in which products and services are offered globally, as well as global partnerships and economic alliances. Having a global view is already required for success (Cheba, Kiba-Janiak 2017).

The Significant Impacts of the Egyptian – Sudanese Relations on their Economy

It is critical for the economy to grow and for future generations to have a greater standard of living. Because of regulation harmonization, commodities may travel freely inside the country, and interoperability of modalities, nodes, and networks is at the heart of it (European Commission, 2010). To accomplish mode integration, it is necessary to have a thorough understanding of present transportation modes and their relationships to nodes. To provide trustworthy, safe, and cost-effective service, professional logistics management in accordance with the country's expectations is also required.

The terms 'intermodal' and 'multimodal' are used interchangeably to describe the movement of goods from one location to another. To make matters even more complicated, the United Nations' Multimodal Transport Handbook defines both (1995). MTOs are responsible for all transportation activities, from the shipper to the consignee. They assure cargo transportation by organizing and supervising the process from shipper's door to consignee's door, adopting the most efficient and cost-effective methods. In order to apply this concept, simplified documentation, commercial procedures, transit infrastructure, and municipal legislation drawn from appropriate standards are required (Koei, 2018).

The Egyptian transportation system will be illustrated as despite the fact that Egypt offers a variety of transportation options, roads transport 94% of freight while railroads and inland waterways transport 6%. Egypt's transportation infrastructure consists of railroads, a road network, and an inland canal. Egypt's domestic freight volume is 500,000 tons (Ministry of Transport (MOT)). While this volume is hampered by a trade imbalance, the number of empty modes returned to ports is significant. Furthermore, emptied ships depart without cargo, which increases transportation costs (Mega Projects, 2020).

Table 1: Annual Modal Share for Egyptian Freight Movement which Depicts Egyptian Freight Flow

Year	Cargo Volume (1000 tons)				Modal Share (%)			
	Road	Railway	IWT	Total	Road	Railway	IWT	Total
1979	73,700	5,000	4,300	83,000	88.7	6.1	5.2	100.0
1992	165,495	9,642 0	3,214	178,351	92.8	5.4	1.8	100
2000	242,000	11,812	2,161 0	256,000	94.5	4.6	0.8	100
2010	433,361	4,042	2,226	439,630	98. 6	0.9	0.5	100.0

Source: (JICA, 2014)

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Egypt must receive industrial inputs from international enterprises located anywhere in the world at the ideal time for manufacturing. More significantly, when it comes to selecting business partners, pricing is a crucial consideration. Companies are becoming increasingly aware that a worldwide freight transportation infrastructure is a vital component of international competitiveness as globalization accelerates. However, Egypt's current transportation development plans are centered on modes, such as sea, road, railway, and inland canal, resulting in sufficient intermodal connectivity and good overall system efficiency for export/import freight operations. The transportation designs themselves did not contain comprehensive and multimodal logistics flow optimization solutions. As a result, Egypt is developing a comprehensive logistics development plan to fulfill existing logistical needs while also reflecting the present shift in freight traffic volume (Oxford Business Group, 2021).

Egypt's transportation system was not designed to manage the current volume of visitors. As a result, after decades of underinvestment, President Sisi's administration has made significant tangible efforts to strengthen the industry by investing heavily in modernizing its infrastructure to modernize and enhance the capacity of various modes of transportation; more than $10 billion has been invested since last year. Investing is likely to continue as a result of investment pledges and memorandums of understanding signed in Egypt Economic Forum in March and subsequent months. Several transportation-related initiatives have been initiated as a result of this investment, including the National Roads Project, the Cairo Metro Line 4 Development Project, the extension of Alexandria and Damietta ports, and the Suez Canal Zone Development Project. Egypt's government has made concentrated efforts to update the country's transportation infrastructure in order to speed up the flow of freight, which has traditionally been transported via Egypt's failing road network. The freight sector has enormous potential for economic growth. This opportunity merits greater consideration and investigation (Bayoumi et al., 2021). Despite the fact that the Nile has been underused as a passenger and freight transit corridor, there are now substantial measures ongoing to expand water capacity (Egyptian National Network, 2017).

However, transportation authorities still face significant challenges, such as developing a comprehensive asset management strategy, increasing safety to prevent accidents, and lowering transportation-related mortality. Authorities are working to improve revenue generation and management in order to create a self-sustaining transportation industry. They are also attempting to attract domestic and foreign investors while easing the fiscal burden on the government. Until these issues are resolved, Egypt will be unable to boast of a sophisticated multimodal transportation network, which would help the country's economy (EBRD, 2017).

Methodology

The research technique captures the majority of papers that will be evaluated for eligibility and inclusion, for a more flexible framework to accommodate shifts in the research and generalization at the end (Aromataris and Riitano, 2014). Despite the ultimate influence on transportation network and infrastructure on the regional integration for Egypt and Sudan, a comprehensive and updated assessment of the existing literature is still negotiated. The current paper aims to fill this gap by presenting the results of a systematic literature review of bringing out the impact of multimodal on the neighboring countries.

Conducting the review papers was through identification of research scope, selecting relevant studies, assessing the quality of selected studies, extracting data, and synthesizing the selected relevant studies from different journals, conferences, and article papers. Additionally, an interpretation of logistics transportation networks leading to a SWOT analysis features the

main strengths and opportunities for Egypt and Sudan transportation and logistics progression, achieving greater benefits for both countries.

Systematic Literature was gathered on the basis of selected keywords (Multimodal, Logistics Centers/Hubs, Regional Integration and Transport Networks) between the years 2004 and 2022, identified and used to online databases search by collecting information from scientific published literature, previous study, books, periodicals, libraries, dissertations, and reports. The sources were selected to be sufficient to address the topic, depending on the multimodal transportation criterion, the choice of a seaport or airport, the convenience, dependability of pickups and deliveries, strategic locations, and competitive fees.

Results and Discussion

The gathered publications are evaluated in the following table (Table 2), based on the given approach, which serves to synthesize previous research in this topic and to highlight the gaps in each study, with the aim of answering the research questions and outlining a plan for future study. After narrowing the total number of articles retrieved to 34, the articles were assessed according to the topic of the study, and the papers goals and methods were determined. This is then followed by an acknowledgment of the study's major takeaways and its limitations. Finally, the recommendations for further study have been addressing.

Table 2: Authors' Name, Paper Focus, Keywords, Year of Publication and Their Findings

Paper No.	Authors' name	Paper Title	Keyword	Year	Paper Focus	Findings
1.	Jiuping Xu, Liming Yao, and Xiaodan Zhao	A Multi-objective Chance-constrained Network Optimal Model with Random Fuzzy Coefficients and their Application to Logistics Distribution Center Location Problem	Distribution Center Location	2011	Geographic coverage is used to describe a hub's local, regional, and global importance. To clarify, a logistics center may be a freight village, logistics node, or distribution center, depending on the existence and extent of variables.	Proposing no distinction between logistics and distribution centers, relocating it to be consistent in its support of both domestic and international businesses.
2.	Zbigniew Bentyn	Poland as a Regional Logistic Hub Serving the Development of Northern Corridor of the New Silk Route	International Logistics	2016	The region's logistical performance. Identifying countries that could play a significant role in the processes to integrate worldwide supply chains. Attracting investors' attention and is advantageous to both local and regional economies.	Improvement study on logistic performance and playing an important role as a logistic hub for geographic location aiding in functions as a distribution hub for future commerce and logistic operations.
3.	Islam El-Nakib	The Supply and Demand of Logistics Services in Egypt: The Case of Logistics Service Providers and the Egyptian Industrial Sector	Logistics	2011	Evaluating the supply and demand for logistics services in the market, where LSPs represent the supply side and industrial enterprises represent the demand side.	Raising awareness of the critical interest of LSPs' role in helping the manufacturing industrial sector.
4.	Katarzyna Zofia Gdowska, and Roger Książek	Cyclic Delivery-Scheduling Problem With Synchronization of Vehicles Arrivals at Logistic Centers	Logistics	2015	An internal logistics management system controls all goods handling, loading, and discharging activities, as well as document circulation processes. The efficiency of this system leads to the overall efficiency of the logistics center.	Boosting the efficiency of trade logistics infrastructure, suggesting that a strong logistics and supply chain management system could support the initiatives.

5.	Indonesian and Dutch organizations and knowledge centers with technical support from the World Bank office in Jakarta	State of Logistics Indonesia	Logistics	2015	Based on surveys of international freight forwarders, this report provides an overview of the logistics of undertaking international trade (exports and imports at ports and airports). Measuring six logistical variables that international freight forwarders believe are crucial.	Over the last several years, it has improved its logistics performance, particularly in the areas of infrastructure, border agencies, and logistical expertise. It demonstrates that the growing interest in logistics from both the public and commercial sectors in Indonesia is now paying dividends.
6.	JICA Study Team	Logistics-related Facilities and Operation: Land Transport	Logistics	2019	Investigates the present state of land transportation modes and facilities. Egypt's transportation modes, including highways, trains, and inland waterways are evaluated, with an emphasis on their functions in the logistics system.	Improving the logistics system, as well as the involvement of commercial stakeholders and the major governmental institutions whose responsibilities have an influence on logistics, bottlenecks are discovered, and solutions are suggested to achieve an efficient system of logistics.
7.	Claudine A. Soosay, and Paul W. Hyland	Driving Innovation in Logistics: Case Studies in Distribution Centers	Logistics Centers	2004	Most firms respect the notion of innovation in order to generate and maintain competitive advantage. Firms must innovate in order to stay competitive.	Investigating and contrasting variables driving innovation in distribution centers in Australia and Singapore, a sector of the logistics function that has been hesitant to adapt in the past.
8.	Drs. L.M. Van der Lugt., and Drs. M.H. Nijdam	The Changing Nature of Logistics Centers: Implications for Ports and Terminals	Logistics Centers	2005	Ports' function as a venue for logistical activities evolves in tandem with the growth of the logistics idea, moving away from central coordination and toward more decentralized physical distribution.	Analyzing the increasingly essential subject of what logistical activities may be drawn by ports and what is the best method to achieve this.
9.	Chin-Shan Lu, and Ching-Chiao Yang.	Evaluating Key Logistics Capabilities for International Distribution Center Operators in Taiwan	Logistics Centers	2006	Key logistical skills for international distribution center operators are objectively evaluated.	Revealing that the customer response capabilities of public and private international distribution center operators vary greatly.
10.	leva Meiduté, and Jurgita Raudeliúnienė	Evaluation of Logistics Centers Establishment External and Internal Factors	Logistics Centers	2011	Logistics centers are pushed to provide competitive and high-quality categories of services to the market, increase their profitability, and minimize environmental interference with their operations.	The growth and development of logistics centers are leading to increased functionality and service quality, as well as the unification of widely used criteria for their establishment.
11.	Olga Girvica	New Supply Chain Creation for Logistics Center Work Optimization	Logistics Centers	2011	The challenge of the decision-making process for the construction of the logistics center's new supply route was noted. The objective is to make decisions on the method of selection, from raw materials to the product invention that enables a corporation to maximize earnings.	The numerical sample of the decision-making process for the Logistics center's new supply and sales channel development in order to maximize profit.

12.	Nasser Saeidi, Hassan Jafari, and Ali Ameli Maryam Barahi	Evaluation the Role of Logistics Centers in the Development of Iranian Seaports	Logistics Centers	2013	It has a unique geographical location in the region and globally, making it a prospective logistic country. Due to the country's strategic location, improving and growing its ports, as well as developing its port value-added services can benefit national reproduction and revenue.	In order to perform international transportation, a logistic center should be offered and supported by well-organized broad range of transportation routes, such as roads, trains, oceans, inner waterways, and air services for a good distribution network.
13.	KTI and GYSEV	Business Case for the Extension of the Intermodal Logistics Center in Sopron	Logistics Centers	2014	The Sopron Logistics Service Centre (SILK), which was owned by GySEV Zrt and operated by GYSEV CARGO Zrt, was largely focused on railway border services, with a focus on multimodal transportation.	Capacity to expand into a continental logistics center between the North-West, South-East (Balkans), and Baltic and Adriatic European territories; utilize the transit potential of the routes that intersect our nation in West-Europe. By the competitive supply of a growing logistics service provider and the activities with a high added value.
14.	Kristina Rimienė, and Dainora Grundey	Logistics Centre Concept through Evolution and Definition	Logistics Centre Concept	2007	Determining the concept of logistics centers by pointing to their emergence and background, as well as evaluating existing logistics center understandings and definitions.	Researchers in logistics have made little attempt to create a unified logistics center concept. Rectifying the hierarchy of logistical facilities and constructing the criteria of logistics center is critical for every researcher interested in logistics theory.
15.	Christophe Theys, Dong Keun Ryoo, and Theo Notteboom	Towards a Generic Framework for the Development of Logistics in Seaports: Lessons from the Busan Case.	Logistics Hubs	2008	Providing a general framework for port logistics growth and cooperation with hinterland regions.	Terms of logistics activity are fairly clearly explained. This framework expressly adds port and hinterland features to the list of important elements in the selection of logistics activity locations.
16.	Islam El-Nakib	Egyptian Firms' Location Preferences for Logistics Hubs: Focus on the Southeast African Region	Logistics Hubs	2010	Presenting the major factors that are considered important when deciding where to locate Regional Distribution Centers (RDCs), as well as identifying the gaps in order to achieve the goal of building a successful regional logistics hub.	Improving coverage and harmonization and promoting the wider use of information and communication technology in trade processes.
17.	MSc. Nguyen Xuan Tinh	Port and Logistics Infrastructure in Vietnam Opportunities for Cooperative Development	Logistics Infrastructure	2018	Utilizing natural circumstances for the long-term growth of the seaport system.	Developing navigation facilities in all channel systems comprehensively.
18.	Bogusz Wiśnicki	Determinants of River Ports Development into Logistics Tri-modal Nodes, Illustrated by the Ports of the Lower Vistula River	Logistics, Multimodal	2016	Network of river logistics hubs along the Vistula. The notion implies river logistics hubs and their linkages to port agglomerations. This map shows the organizational and technological aspects of river logistics.	Allowing for the use of the provided technique for the creation of river logistics hubs in other places.

19.	Maritime Transport Sector	The Egyptian Maritime Transport Strategy, Development and Increasing the Competitiveness of Ports	Maritime Logistics	2018	Meeting economic demands for the expansion and development of the maritime transport industry, as well as establishing plans to assure its efficiency and quality of performance	Expanding the capacity of seaports and improving the efficiency of logistics services performed
20.	Wang Qingyun	Ideology and Practice of Systems Engineering in Multi-Modal Transport Planning	Multimodal	2008	Based on the foundation of the formulation of the multi-modal transport network planning and description of the recent development of the national multi-modal transport network from the standpoint of systems engineering.	Building a strong indication capable of recognizing the importance and its contribution beginning with network performance and establishing a multi-modal transportation system of comfort, smoothness, high efficiency, and safety.
21.	Agachai Sumalee, Kenetsu Uchida, and William H.K. Lam	Stochastic Multi-modal Transport Network under Demand Uncertainties and Adverse Weather Condition	Multimodal	2011	Offering a multi-modal transportation network assignment model that takes into account uncertainty on both the demand and supply sides of the network.	Developing a stochastic network model for a multi-modal transportation network that takes into account vehicle, bus, subway, and pedestrian modes.
22.	Vasco Reis, J. Fabian Meier, Giuseppe Pace, and Roberto Palacin	Rail and Multi-modal Transport	Multimodal	2013	Defining inter- and multi-modal travel and comparing their performance. Following an assessment of internal and external hurdles to effective multimodal transport, an analysis of the benefits and drawbacks of merging rail and road is carried out.	A conversation on energy efficiency in rail.
23.	Adriaan Hendrik van der Weijde ⇑, Erik T. Verhoef, and Vincent A.C. van den Berg	Competition in Multi-modal Transport Networks: A Dynamic Approach	Multimodal	2013	Examining the distinction between markets with a monopolistic public transportation operator that operates all public transportation connections and markets with individual operators owning each public transportation link.	Employing computer simulations to demonstrate that, contrary to the findings of standard vertical competition research, monopolistic rates are not necessarily cheaper than duopolistic fares; the converse can also occur. In addition, investigating how various characteristics affect the price disparity and how this influences welfare.
24.	G.L.L. Reniers, W. Dullaert.	A Method to Assess Multi-modal Hazmat Transport Security Vulnerabilities: Hazmat Transport SVA	Multimodal	2013	Assessing the relative security risk levels of various modalities of hazardous freight transportation.	Analyzing the security risk levels of various route segments and routes of hazardous goods transportation, and adopting countermeasures from a unimodal as well as a multi-modal viewpoint.
25.	Markus Friedrich	Evaluating the Service Quality in Multi-modal Transport Networks	Multimodal	2016	A technique for assessing the service quality of full trips between an origin and a destination point based on a six-level service assessment scheme (LOS).	Recognizing network flaws not only at the OD-pair level, but also to identify important network parts.
26.	Petri Mononen, Pekka Leviakangas, and Harri Haapasalo	From Internal efficiency to Societal Benefits of Multi modal Transport Safety Agency's Socio-economic Impact Analysis	Multimodal	2017	Pressures to reduce public spending and providing great value for money from initiatives that employ scarce public funds may be found all over the world.	Methods for mapping effect processes; measurement of service socioeconomic impacts.

27.	Anastasija Bolkovskaa, and Julija Petuhova	Simulation-based Public Transport Multi-modal Hub Analysis and Planning	Multimodal	2017	The notion of a multimodal transportation system, transportation system management technologies, and other researchers' relevant studies of multimodal hub planning are examined.	Recommendations are made to improve the operation efficiency of the bimodal transport hub train - international bus.
28.	Xiaodong Liu, Yuan Zhou, and Andreas Rau	Smart Card Data-Centric Replication of the Multi-modal Public Transport System in Singapore	Multimodal	2019	Using a smart card database to precisely replicate Singapore's multi-modal public transport system. Exogenous passenger demand is replicated, and various operational details are provided, including passenger inter-modal travel.	Delivering reliable quantitative information on a variety of topics to aid decision-making, such as accurate temporal and geographical travel demand analysis, transfer pattern analysis, traffic situation inquiry, and bus utilization analysis.
29.	Nodir Jumaniyazov	Creating Multimodal Logistics Centers Prospect for Development in Central Asia	Multi-modal Logistics Center	2010	A logistics centre is a center of commerce where different operators carry out transport, logistics, and commodities distribution operations for both domestic and international transit.	A logistics centre should be serviced by a range of transport options to promote multimodal commodities handling (roads, rail, sea, inland waterways, and air).
30.	Maritime Transport Sector 'Arab Republic of Egypt'	The Egyptian Maritime Transport Strategy, Development and Increasing the Competitiveness of Ports	Regional Integration	2018	Highlighting that the Egyptian Ministry of Transport (Marine Transport Sector) has designed an integrated maritime strategy that is congruent with the overall national policy, approach aimed at improving the efficiency of the marine transportation system.	Improving the capacity of seaports and the effectiveness of services supplied.
31.	Ariel Dinar, and Getachew S. Nigatu	Distributional Considerations of International Water Resources under Externality: The Case of Ethiopia, Sudan and Egypt on the Blue Nile	Regional Integration	2019	Examining the distributional implications of various water allocation strategies used in Africa for the Blue Nile. Water trade is created to show how such an institution might improve current institutions' effectiveness in obtaining incremental advantages from collaboration.	It is discovered that when a core exists, it is relatively tiny, indicating a frail basis for cooperation.
32.	Elin Hellquist	Regional Sanctions as peer review: The African Union against Egypt (2013) and Sudan (2019)	Regional Integration	2020	Presenting a fresh argument on regional sanctions from the field of scholarly publishing. Through their reliance on community-derived authority, equality, and the rationale for African Union (AU) sanctions against Egypt (2013) and Sudan (2019).	Contributing to the successful implementation of democratic standards beyond the immediate crisis, the AU sanctions are pragmatic and resolution-oriented, with the goal of avoiding chaos rather than establishing perfect democracy.
33.	Radwan G. Abd Ellah	Water Resources in Egypt and their challenges, Lake Nasser Case Study	Regional Integration	2020	Water resource challenges will be one of the century's most critical economic and social issues. Egypt is one of the nations that will face significant issues, including groundwater, rainfall, and desalination water limitations due to its fixed share of Nile water.	Depending on the water intake through the Nile discharge and the water outflow through the High dam, there is still water loss due to evaporation and minor water seepage from Lake Nasser. The Toushka initiative is part of a nationwide plan to alter this trend of uneven population potential distribution.

34.	Mary Richard Akpana, *, Nsisong Udom Isemina, Arit Esio Udohb, and Diane Ashiru-Oredopec	Implementation of Antimicrobial Stewardship Programmers in African Countries: A Systematic Literature Review	Regional Integration	2020	Evaluating the degree to which antimicrobial stewardship programmes (ASPs) are being implemented in African nations, as well as the stated outcomes.	The findings of this analysis demonstrate a scarcity of data on ASP implementation in African nations. The accomplishments documented in the included studies demonstrate that additional African nations may adopt similar programs.

(Authors, 2022)

Few studies have tried to examine the effect of agreements between both nations, namely Egypt and Sudan, to decide which route is most efficient to develop a highway for their reach, and even fewer have utilized the river connection to disrupt the trade flow in order to assess multimodal transportation. Moreover, there have been no recent analyses of the border terminals and route networks between Egypt and Sudan, which might increase the effectiveness of commerce between them, especially via the modernization and upgrading of ports in the countries of the Nile Basin.

Despite the fact that additional hubs, activities, and services might be beneficial to the transportation and logistics networks in both countries. These results were discovered in earlier research on Egyptian-Sudanese development projects in logistics and transportation. Additionally, there have been no more studies into the route networks and border crossing points between Sudan and Egypt. These may enhance import and export operations for both nations, particularly concerning the modernization and upkeep of ports in the Nile Basin nations. Although both countries' logistics and transportation infrastructures could use more hubs, activities, and services.

Based on the previous reviews, the foundation of the research theoretical framework is featured (shown below in Figure 1), recognizing the impact of trade cooperation, agreements, and logistics performance on Egypt-Sudan logistical transportation networks.

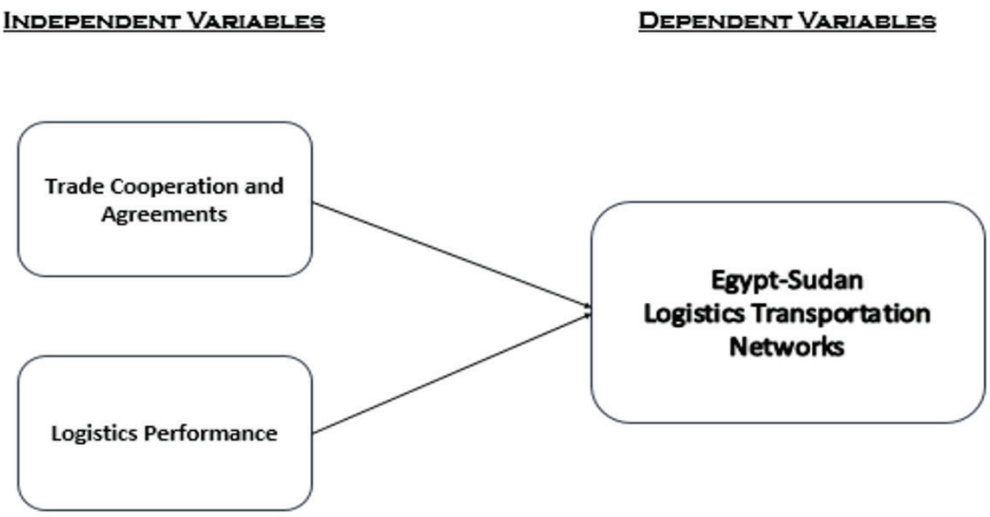

Fig. 1: Theoretical Framework
(Authors, 2022)

To be outlined in a tabular form, A SWOT analysis (Table 3) is performed to work on trade and logistics facilitation between Egypt-Sudan in order to remove impediments and barriers in

this research to emphasize that the strengths, weaknesses, opportunities, and threats for Egypt and Sudan can take various forms, including the following:

Table 3: The SWOT Analysis – Egypt and Sudan Cases

Internal	External
❖ **Strengths** 1. In terms of infrastructure, border agencies, and logistical know-how, evidencing that the governments and different sectors are now realizing the benefits of their increased focus on logistics. 2. Improved efficiency and higher-quality services are two outcomes for the booming logistics industry, as is the standardization of key requirements for establishing facilities. 3. Suggestions, to be implemented in both countries, are obtainable to enhance the effectiveness of the train-international-bus transportation hub. 4. Egypt and Sudan offer low prices by a rapidly expanding logistics service providers and high-value services companies provide.	❖ **Opportunities** 1. Unimodal and multimodal analyses of the security risks posed by different segments and routes of hazardous commodities movement, and the implementation of countermeasures. 2. Enhancing the efficiency and capability of seaports. 3. Several modes of transportation should feed into a Logistics Centre to encourage multimodal goods processing (roads, rail, sea, inland waterways, and air). 4. Enhancing navigational infrastructure in all existing channel networks. 5. Building a multi-modal transportation system that is pleasant to use, easy to navigate, highly efficient, and safe requires first establishing a powerful indicator capable of detecting significance and its contribution. 6. Permitting the approaches to be used in other regions to build river logistics hubs. 7. Improving the effectiveness of logistical services and increasing the capacity of seaports.
❖ **Weaknesses** 1. Whenever a development is suggested, it is found to be rather from a small enterprise, suggesting a weak foundation for countries' cooperation. 2. Define the wide gap between Egypt-Sudan public and private international distribution center, operators' pathetic ability to respond to client inquiries and complaints about the service provided, and results from countries' weak corporation. 3. Neglecting the importance of energy efficiency in the train industry. 4. Still examining the question of how ports might effectively attract logistical operations.	❖ **Threats** 1. Techniques for tracing the causes of an effect; estimating the societal and economic value of a service. 2. To establish an effective logistics system, obstacles must be identified and remedies proposed. This requires not just a better logistics system but also the participation of commercial partners and the key governmental organizations whose tasks have an impact on logistics. 3. Few attempts have been made by logistics researchers to develop a standard model for a logistics hub.

(Authors, 2022)

Conclusion and Future Studies

Concluding with the researchers' proposals for how to expand the opportunities between Egypt and Sudan as well as how to improve their existing commercial issues:

- Studying ways to enhance logistical performance and positioning oneself geographically to serve as a distribution center for future commercial and logistical activities is a priority.
- A greater focus on LSPs' vital role in assisting the manufacturing industry and improving trade logistics infrastructure, which may be aided by a robust logistics and supply chain management system.
- Quantitative representation of the deliberative process guiding the expansion of the Logistics Core's supply and sales channels in pursuit of maximum profit.
- In order to carry out international transportation, a logistics hub must provide and be backed by a well-organized wide variety of transportation channels, including roads, railroads, seas, inner canals, and air services.
- Port and hinterland characteristics are explicitly included as factors that matter when deciding where to conduct logistics operations.
- Increased use of information and communication technologies in trade procedures, including efforts to improve coverage and harmonization.
- Building a stochastic model of a transportation network that incorporates car, bus, subway, and foot traffic.
- Everyone doing research in logistics theory must work to fix the skewed hierarchy of logistical facilities and provide criteria for what constitutes a logistics center.
- Taking use of computational modelling to show that, contrary to the results of traditional studies of vertical competition, monopolistic rates are not always more expensive than duopolistic fares. In addition, looking at the role that different factors play in creating pricing discrepancies and how they impact welfare.
- Identifying critical nodes in the network and spotting problems beyond the origin destination pair level.
- Providing precise quantitative data on issues including travel demand at certain times and locations, transferring patterns, traffic condition inquiries, and bus usage analyses, all of which may be used to guide decisions.

Despite the requirement for sophisticated logistics infrastructure as an institutional investment product, economic development, supply chain restrictions, and the advent of e-commerce have all contributed to the expansion of European markets. Warehouse and logistics facility building might benefit from having ready access to a large land investment bank. Lower Egypt's well-established infrastructure and facilities, as well as its highly developed industrial firms, suggest that the area has potential for further investment and growth.

In light of the result and contribution, the researchers propose that future research could include the theoretical framework to be verified and tested using primary data, concluded through interviews with multimodal transport operations workers in Egypt and Sudan who work in various zones, as well as contacting Sudanese transport authority managers and Egyptian firms in Sudan in order to discuss the key findings of this study and conduct the conceptual framework.

References

[1] Abd Ellah, R.G. (2020) 'Water resources in Egypt and their challenges, Lake Nasser case study', *Egyptian Journal of Aquatic Research.* Available at: https://doi.org/10.1016/j.ejar.2020.03.001.

[2] Edoardo, A. and Dagmara, R. (2014) 'Systematic Reviews: Constructing a Search Strategy and Searching for Evidence', *American Journal of Nursing,* 114(5). Available at: https://doi.org/10.1097/01.NAJ.0000446779.99522.f6.

[3] Bandekar, S.R. and Vijayalakshmi, C. (2019) 'Optimization algorithm in supply chain management', *International Journal of Innovative Technology and Exploring Engineering*, 8(12). Available at: https://doi.org/10.35940/ijitee.L2724.1081219.

[4] Bayoumi, E.O. et al. (2021) 'The Role of Road Transport Infrastructure Investments on Logistics Performance: A Research Agenda', *International Business Logistics*, 1(2). Available at: https://doi.org/10.21622/ibl.2021.01.2.016.

[5] Bentyn, Z. (2016) 'POLAND AS AN REGIONAL LOGISTIC HUB SERVING THE DEVELOPMENT OF NORTHERN CORRIDOR OF THE NEW SILK ROUTE', *Pressacademia*, 3(2). Available at: https://doi.org/10.17261/pressacademia.2016219941.

[6] Bolkovska, A. and Petuhova, J. (2016) 'Simulation-based Public Transport Multi-modal Hub Analysis and Planning', in *Procedia Computer Science*. Available at: https://doi.org/10.1016/j.procs.2017.01.169.

[7] Dinar, A. and Nigatu, G.S. (2013) 'Distributional considerations of international water resources under externality: The case of Ethiopia, Sudan and Egypt on the Blue Nile', *Water Resources and Economics*, 2–3. Available at: https://doi.org/10.1016/j.wre.2013.07.001.

[8] El-Nakib, I. (2010) 'Egyptian Firms' Location Preferences for Logistics Hubs: Focus on the Southeast African Region', 8th International Conference on Supply Chain Management and Information Systems. Available at: https://doi.org/10.13140/RG.2.1.1431.5364.

[9] El-Nakib, I. (2011). 'The supply and demand of logistics services in Egypt: the case of Logistics Service Providers and the Egyptian industrial sector', the 23rd Nordic Logistics Research Network (NOFOMA) conference, hosted by Department of Business Administration and Social Sciences, Harstad University College, Harstad, Norway. Available at: https://doi.org/10.13140/RG.2.1.1087.4728.

[10] Engler, D. et al. (2021) 'Antimicrobial stewardship activities in public healthcare facilities in South Africa: A baseline for future direction', *Antibiotics*, 10(8). Available at: https://doi.org/10.3390/antibiotics10080996.

[11] van der Baan, C., Meeuws, R. and Sandee, H. (2015) 'State of Logistics Indonesia 2015', *Center of Logistics and Supply Chain Studies, Institut Teknologi Bandung (ITB), Asosiasi Logistik Indonesia, STC-Group and the World Ban.* Available at: https://www.researchgate.net/publication/313366687_State_of_Logistics_Indonesia_2015.

[12] Reniers, G.L.L. and Dullaert, W. (2013) 'A method to assess multi-modal Hazmat transport security vulnerabilities: Hazmat transport SVA', *Transport Policy*, 28. Available at: https://doi.org/10.1016/j.tranpol.2012.05.002.

[13] Gdowska, K. & Książek, R. (2015). Cyclic Delivery-Scheduling Problem with Synchronization of Vehicles' Arrivals at Logistic Centers. LogForum, Scientific Journal of Logistics. 4(11). 341-350. Available at: https://doi.org/10.17270/J.LOG.2015.4.3.

[14] Ghoneim, A. & Helmy, O. (2010). Maritime Transport and Related Logistics Services in Egypt, Egytian Center for Economic Studies. Available at: https://www.researchgate.net/publication/228376043_Maritime_Transport_and_Related_Logistics_Services_in_Egypt.

[15] Hellquist, E. (2021) 'Regional sanctions as peer review: The African Union against Egypt (2013) and Sudan (2019)', *International Political Science Review*, 42(4). Available at: https://doi.org/10.1177/0192512120935530.

[16] Rimienė, K. and Grundey, D. (2007) 'Logistics Centre Concept through Evolution and Definition', *Engineering Economics*, 4(4). Available at: https:// DOI:10.5755/J01.EE.54.4.12286.

[17] Leat, M., & El-Kot, G. (2022). The impact of the Covid-19 pandemic on teleworking and the logistics of work in Egypt. *International Business Logistics*, 2(1), 24-40. Available at: http://dx.doi.org/10.21622/ibl.2022.02.1.024.

[18] Liu, X., Zhou, Y. and Rau, A. (2019) 'Smart card data-centric replication of the multi-modal public transport system in Singapore', *Journal of Transport Geography*, 76. Available at: https://doi.org/10.1016/j.jtrangeo.2018.02.004.

[19] Lu, C.S. and Yang, C.C. (2006) 'Evaluating key logistics capabilities for international distribution center operators in Taiwan', *Transportation Journal*, 45(4). Available at: https://doi.org/10.2307/20713652.

[20] Meidute, I. and Raudeliuniene, J. (2011) 'Evaluation of logistics centres establishment: External and internal factors', *Business: Theory and Practice*, 12(2). Available at: https://doi.org/10.3846/btp.2011.18.

[21] Mononen, P., Leviäkangas, P. and Haapasalo, H. (2017) 'From internal efficiency to societal benefits – Multi modal transport safety agency's socio-economic impact analysis', *Research in Transportation Economics*, 66. Available at: https://doi.org/10.1016/j.retrec.2017.05.002.

[22] Nazemzadeh, M. and Queiroz, C. (2018) 'The Role of Modern Ports in the National Economic Development: An Application to Iran and the Port of Bandar Abbas', in International Conference on *Transportation and Development 2018: Planning, Sustainability, and Infrastructure Systems*. Available at: https://doi.org/10.1061/9780784481561.018.

[23] Jumaniyazov, N. (2010) 'Creating multi-modal logistics centers: Prospect for development in Central Asia', *Perspectives of Innovations, Economics and Business* [Preprint]. Available at: https://doi.org/10.15208/pieb.2010.70.

[24] Notteboom, T.E. (2008) 'The relationship between seaports and the inter- modal hinterland in light of global supply chains: European challenges. Discussion Paper No . 2008-10', *Transport*, 10(March). Available at: https://doi.org/10.1787/20708270.

[25] Reis, V. *et al.* (2013) 'Rail and multi-modal transport', *Research in Transportation Economics*, 41(1). Available at: https://doi.org/10.1016/j.retrec.2012.10.005.

[26] Soosay, C.A. and Hyland, P.W. (2004) 'Driving Innovation in Logistics: Case Studies in Distribution Centres', *Creativity and Innovation Management*, 13(1). Available at: https://doi.org/10.1111/j.1467-8691.2004.00292.x.

[27] Sumalee, A & Uchida, K& Lam, W. (2011). Stochastic multi-modal transport network under demand uncertainties and adverse weather condition. Transportation Research Part C: Emerging Technologies. 19. https://doi.org/10.1016/j.trc.2010.05.018.

[28] Phuong Vu, T., Grant, D.B. and Menachof, D.A. (2020) 'Exploring logistics service quality in Hai Phong, Vietnam', *Asian Journal of Shipping and Logistics*, 36(2). Available at: https://doi.org/10.1016/j.ajsl.2019.12.001.

[29] Theys, C., Ryoo, D.K. and Notteboom, T. (2008) 'Towards a generic framework for the development of logistics in seaports: lessons from the Busan case', *Journal of International Logistics and Trade*, 6(2). Available at: https://doi.org/10.24006/jilt.2008.6.2.1.

[30] Tseng (2005) 'The Role of Transportation in Logistic Chain', *Journal of the Eastern Asia Society for Transportation Studies*, 5. Available at: https://www.semanticscholar.org/paper/THE-ROLE-OF-TRANSPORTATION-IN-LOGISTICS-CHAIN-Tseng-Yue/5a5ce0c4f011c336da2a5f59e8c2adafb1d348c2.

[31] van der Lugt, L.M. and de Langen, P.W. (2005) 'The changing role of ports as locations for logistics activities', *Journal of International Logistics and Trade*, 3(2). Available at: https://doi.org/10.24006/jilt.2005.3.2.059.

[32] van der Weijde, A.H., Verhoef, E.T. and van den Berg, V.A.C. (2012) 'Competition in Multi-Modal Transport Networks: A Dynamic Approach', *SSRN Electronic Journal* [Preprint]. Available at: https://doi.org/10.2139/ssrn.2169964.

[33] Wang, Q.Y. (2008) 'Ideology and practice of systems engineering in multi-modal transport planning', *Jiaotong Yunshu Xitong Gongcheng Yu Xinxi/ Journal of Transportation Systems Engineering and Information Technology*, 8(1). Available at: https://doi.org/10.1016/s1570-6672(08)60006-9.

[34] Wiśnicki, B. (2016) 'Determinants of River Ports Development into Logistics Trimodal Nodes, Illustrated by the Ports of the Lower Vistula River', in *Transportation Research Procedia*. Available at: https://doi.org/10.1016/j.trpro.2016.11.054.

[35] Xu, J., Yao, L. and Zhao, X. (2011) 'A multi-objective chance-constrained network optimal model with random fuzzy coefficients and its application to logistics distribution center location problem', *Fuzzy Optimization and Decision Making*, 10(3). Available at: https://doi.org/10.1007/s10700-011-9105-6.

[36] Yue, Y. *et al.* (2021) 'Evaluating the capacity coordination in the urban multimodal transport network', *Applied Sciences (Switzerland)*, 11(17). Available at: https://doi.org/10.3390/app11178109.

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Investigating the Impact of the Russian-Ukrainian Conflict on the Egyptian Market: Insights from Multiple Sectors

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Abstract

Purpose: *This research aims at investigating the impact of the Russian-Ukrainian war on the supply chain processes in the Egyptian market. In addition to developing contingency plans that could guide the Egyptian stakeholders in achieving efficient and resilient supply during crises.*

Design/Methodology/Approach: *Published reports and statistical records concerning the Russian-Ukrainian war and its impact on the supply chain disruption in Egypt are reviewed. Following that, a focus group is held with Egyptian stakeholders, including high-level government participants and industrial representatives from the Egyptian Chamber of Commerce, to investigate the current situation in Egypt. In addition, three semi-structured interviews with Egyptian market representatives, including: representatives from the food sector, the oil and gas sector, and the Egyptian tourism sector, were conducted to help the Egyptian market stakeholders overcome those supply chain complexities.*

Findings: *The study showed that the most affected markets are the food market, the tourism sector, and the oil and gas sector. Upon which, a SWOT analysis technique is used to show the major strengths, weaknesses, threats, and opportunities in the Egyptian market. In addition, a road map is presented to producers and service managers to guide and upgrade their strategic plans to face any unexpected situations in the upcoming years and to show the gap to future researchers.*

Research Implications/Limitations: *The Egyptian market stakeholders in food, oil and gas, and tourism need to implement new strategies for adapting to and dealing with crisis management, renovating production operations plans, and satisfying their market needs.*

Originality: *The paper is the first to provide a comprehensive analysis and evaluation of the impact of the crisis and the Russian-Ukrainian conflict on the Egyptian market, as well as new alternative and contingency plans to assist Egyptian stakeholders in mitigating its negative consequences.*

Keywords: *Russian-Ukrainian conflict, supply chain, Egyptian market.*

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Introduction

The disputes between Ukraine and Russia have been obvious to the whole world since Ukraine achieved independence in 1991. On 16th of February 2022, Russia declared a war against Ukraine through missile and shelling attacks against specific Ukrainian cities (Goshwami, 2022). The Russian-Ukrainian invasion started due to geopolitical issues. In 2021, the disputes between Russia and Ukraine worsened when the Ukrainian President implored the US President to let Ukraine join the North Atlantic Treaty Organization (NATO), which is an alliance between 28 European countries and two North American countries that promotes peace and security in the North Atlantic region (Jones, 2022).

The main goal of NATO is to expand eastward towards Russia's border to be fully surrounded and spread peace, which poses a major security threat to Russia because the Crimean invention will be stopped, and hence, Russia will no longer get benefits from trading through the Ukrainian Sevastopol seaport which is considered the backbone of the Russian maritime commercial trade, as Russia's ports are in the Far East, which get frozen for some time during the year, thereby hindering and limiting Russia's maritime commercial trade and security (Chaunhan, 2020).

Accordingly, because of the Russian-Ukrainian conflicts, world imports and exports are highly influenced because Russia and Ukraine together are considered the leading export countries in the world. Specifically, in the grain industry, both countries produce almost a quarter of the world's wheat production, which is used in feeding billions of the world population, in addition to sunflower seed oil and corn. In addition to the disruptions in the tourism sector and the dramatic inflation in the oil and gas supply chain industry (Swanson, 2022).

In the Middle East, the population is highly dependent on wheat imports, which is considered the main feeding source. Egypt is the most consumer of bread country in the Middle East, and 85% of Egypt's wheat imports are from Russia and Ukraine. As a result, the Russian invasion of Ukraine has a negative impact on Egyptian wheat imports because all grain supplies are disrupted, and prices volatile (Beaubien, 2022). Moreover, Egypt depends on the tourism industry to a great extent for its foreign exchange rates and most of the tourists in Egypt are coming from Russia and Ukraine. Last but not least, the oil and gas industry is affected in Egypt and the transportation fares might get higher as Egypt depends on Russian the oil imports to some extent (Swanson, 2022).

Consequently, the main aim of this research is to investigate the impact of the Russian-Ukrainian war on the Egyptian market through assessing the current situation of the Egyptian market after the Russian-Ukrainian war and how to deal with it through crisis management techniques in addition to establishing proactive strategic plans to deal with any shortage and maintain its price by avoiding price fluctuations. The research starts by giving a brief introduction about the war and the main research aim and objectives, followed by a review of the previous studies regarding the crisis management. Then, the methodological section leads into the secondary data analysis through reviewing the Egyptian statistical records and the primarily data analysis and findings are presented through a series of focus group and semi structured interviews. Finally, the research concludes with a roadmap and recommendations for further research.

Crises Management in Supply Chain

Supply chain is considered as a complex network as it is composed of a series of processes in which products and services flow through different steps to fulfill the requirements of the customers and the main goal of logistics which is to minimize total costs (Cuervo et al., 2010). In case of human related crises, the supply chain and logistics activities are interrupted, and a

major disruption of the normal flow of goods or services might cause a severe disruption (Hittle and Leonard, 2011).

Therefore, the affected stakeholders should apply a proactive crises management approach to avoid crises harmful effects. Although, most of the previous crises case studies did not have any crisis management proactive plans and the stakeholders are still following the typical crisis management by applying its systematic process that comprises mainly three practices which are crisis assessment and evaluation and planning of different recovery scenarios (Ponisa and Ntalla, 2016). Also, stakeholders rely on different approaches to cope with crisis situations such as employee's reduction, cost reduction, outsourcing, and developing collaborative consumption (Diallo and Kaswengi, 2018).

From the supply chain perspective, crises have severe negative impacts on the supply chain practices. First, direct impact from crises is on manufacturing plants that need to shut down if their workforce is affected. Not only individual plants and production lines but also entire industries have been affected by such events. Second, indirect effects were felt through the supply chain, especially where alternative suppliers could not be found, or worse, and were impacted simultaneously. Further indirect effects appeared quickly on the horizon as a combination of export and travel bans, and later due to large-scale unemployment through a reduction of consumption (Dubey and Gunasekaran, 2016).

In addition, to compete in global supply chains between mega monopolies, implementing supply chain integration mechanisms will lead to reducing supply chain costs, time in supply operations, quality control, and the costs of several operations in addition to improving the accuracy of demand forecasts by all partners. (Elwakkad and Deselnicu, 2021). Therefore, the triple-A supply chain is a propitiate solution in disaster relief to respond rapidly to short-term changes through agility, that helps organizations to respond flexibly to demand fluctuations by, for instance, stock availability and access and also through adaptability by adapting to complex dynamic environments, and finally through alignment by integrating and coordinating processes with all participating partners (Kovács and Sigala, 2021).

Particularly, in domestic supply chain in developing countries, despite the significant innovations and achievements in supply chain management methods and tools, manufacturers and suppliers are still struggling to mitigate the possible impacts of the un-resilience supply chain due to crises and disruptions (Tsiamas and Rahimifard, 2021).

Therefore, as stated by Tsiamas and Rahimifard in (2021), stakeholders who are managing and operating supply chains should apply the following steps that could be shown in Figure 1 to minimize the probability of any negative impact resulting from crises and supply chain disruption.

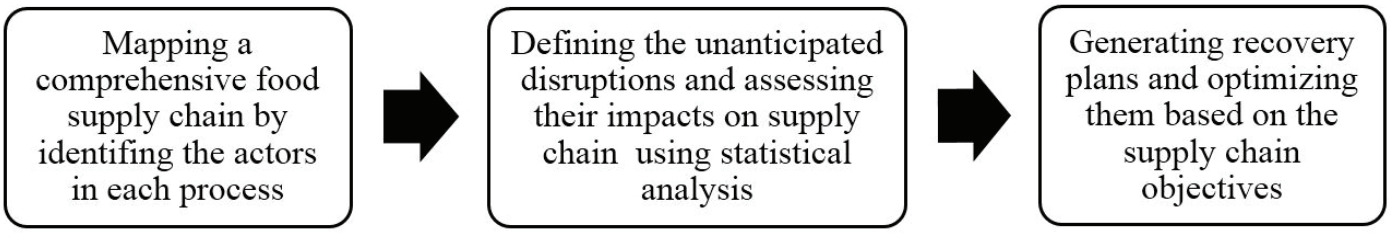

Fig. 1. Crises Management in Supply Chain
Source: (Tsiamas & Rahimifard, 2021)

Therefore, from the reviewed literature, this research aims at investigating the impact of the Russian-Ukrainian war on the Egyptian market supply chain and find alternatives to satisfy the Egyptian domestic demand. This section highlighted the importance of crises

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management from the supply chain perspective. In the following sections, the methodology of this research will be explained to find solutions and alternatives to the Egyptian supply chain problems through conducted interviews, focus group, and published statistical records. Finally, suggested recommendations will be presented through a roadmap to be used as guidance to overcome this severe problem.

Methodology

To investigate the impact of the Russian-Ukrainian conflict on the Egyptian supply chain uncertainties, an empirical study is conducted through a combination of data and knowledge from different sources which helps increase the transparency, reliability and objectivity of a case study that allows other research to apply the case measures and end up with the same conclusions.

As shown in Figure 2, this research used two data collection methods. First, the secondary data collection method is used through reviewing the previous reports and the statistical records that have been conducted on crisis management by focusing on the Russian-Ukrainian war and its impact on the supply chain uncertainties and risks. Afterwards, primary data collection methods are used through conducting an online focus group with a group of experts and stakeholders including high level participants and representatives from the Egyptian Chamber of Commerce, with the aim of discussing the challenges and supply chain interruptions that Egypt might face in the coming era and assessing the current situation of the Egyptian market. Based on the focus group discussion, a SWOT analysis is established to show the Egyptian market strengths, weaknesses, opportunities, and threats.

Moreover, three separate semi-structured interviews were conducted with two importers from two Egyptian importing companies in several sectors, including grains and sugar sectors as they are considered as the main Egyptian food sources, in addition to Egyptian two traders from oil and natural gas companies, and two owners of Egyptian tourism companies, with the aim of developing contingency plans to guide the Egyptian importers and producers towards adaptable, flexible, and more efficient supply chain strategies and proposing recommendations to avoid any shortages in the Egyptian market through a proposed roadmap.

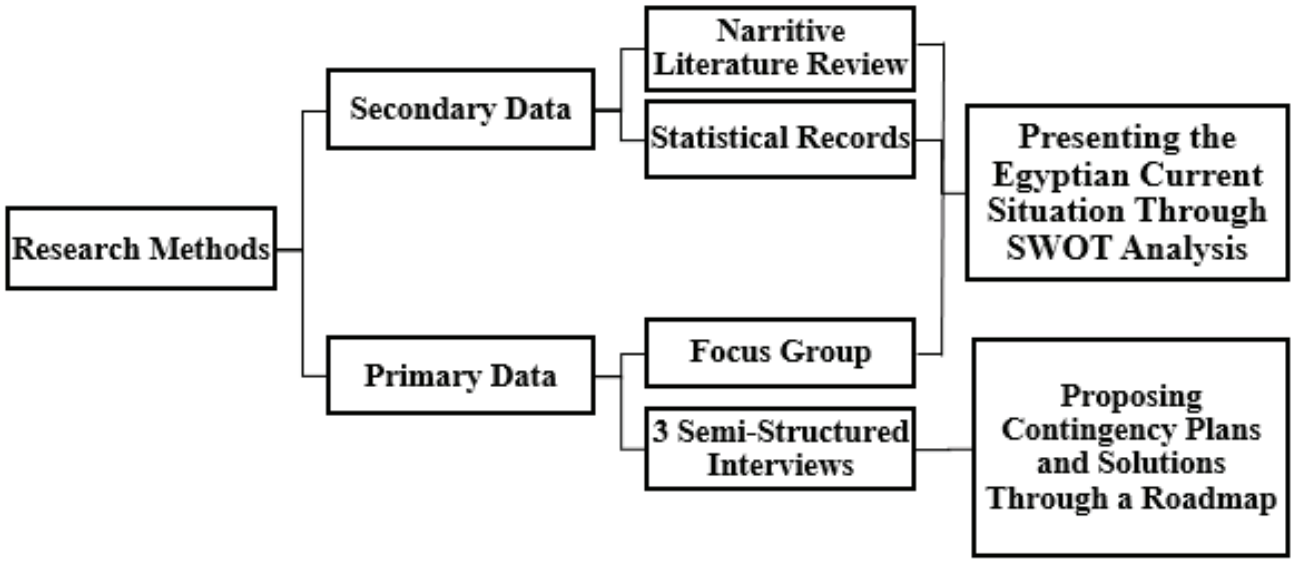

Fig. 2. A visual representation of the research steps
Source: by the authors, 2022

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Discussion and Results

Assessing the Current Situation of the Egyptian Market after the Russian-Ukrainian War

Recently, in February 2022, after Russia's attack on Ukraine, food supply chains are disrupted and threatened, especially grain supply chain, as both countries account for third of the world's wheat exports, as shown in Figure 3, a fifth of its corn trade and almost 80% of sunflower oil production. The most affected trade due to this crisis is wheat exports as it depends on maritime transport because all the inland commercial vessels are banned and all the surrounded seaports to these two countries stopped their operations (Terazono et al., 2022).

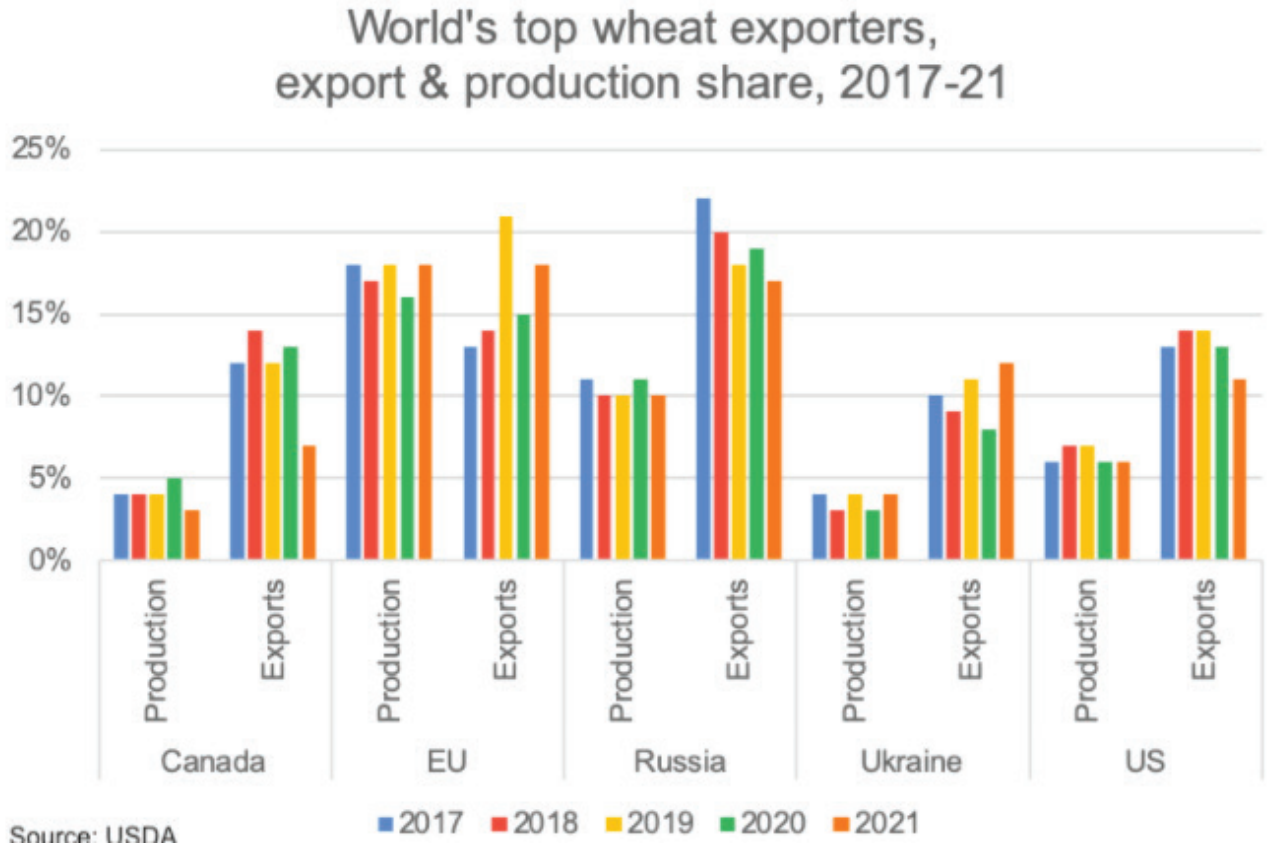

Fig. 3. The world's top wheat exporters
Source: (Foreign Agricultural Service, 2022)

On the other hand, according to the published statistical records of Trading Economics in 2022, Egypt is considered one of the most importing countries of agricultural products; mainly wheat and maize and they accounts for around 24% of the Egyptian imports. While in 2018, wheat was the leading imported commodity in Egypt with about 47 billion Egyptian pounds, the total import value across commodities of Egypt is 1.5 trillion Egyptian pounds (Galal, 2021).

Consequently, after the Russia-Ukraine war, the Egyptian economy is exposed to a severe threat. In addition to the Egyptian food security because the Egyptian agricultural sector is facing inability to produce enough grains, especially

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wheat, and oil seeds to meet even half of the country's domestic demand. It also counts on large volumes of heavily subsidized imports from Russia and Ukraine, around 85%, to be able to ensure sufficient along with affordable supplies of wheat to produce bread. Furthermore, the war also jeopardizes the Egyptian wheat supply because Egypt was mainly depending on its imports (Singh, 2022). Hence, Egypt is in need of finding alternative suppliers and wheat production strategies to fulfill its needs by taking urgent and decisive action (Tanchum, 2022).

Furthermore, Russia is considered as the world's third largest oil producer. It supplies 14% of the global production which accounts for nearly seven to eight million barrels per day of crude oil to markets worldwide. However, due to the Russian-Ukrainian conflict, the prices of oil and gas have increased dramatically in March 2022 compared to 2021 prices (Singh, 2022). This price boost could be shown in Figure 4:

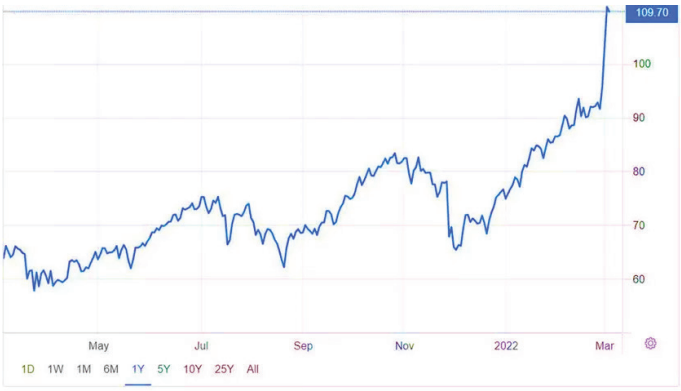

Fig. 4. Oil prices changes in 2021 and 2022
Source: (Trading Economics, 2022)

Besides, the tourism sector is also affected as a result of the crisis. The tourism supply chain involves many components, not just accommodation, transport and trips, but also bars and restaurants, food productions, waste disposal and the infrastructure that supports tourism in destination (Karadima, 2022). It is considered as a network of tourism organizations involved in a series of diverse activities, ranging from providing an entire spectrum of components of tourism products or services, such as flights, accommodations at the tourism reception desk, and ending with the sale of tourism products in the tourism region (Puwanendram and Ganeshan, 2021). According to the Russian-Ukrainian conflict, the tourism sector is negatively affected and exposed to a severe risk as the Russian and Ukrainian tourists had been making up a larger proportion of tourists in many European, Asian, and Middle Eastern countries over the past couple of decades (Karadima, 2022).

Thus, in order to assess the current situation of the Egyptian market more comprehensively, an online focus group was conducted in May 2022 with the Egyptian stakeholders, including high-level of participants from the government and industrial representatives from the Egyptian Chamber of Commerce as shown in the following section:

- **The Russian-Ukrainian conflict effect on the Egyptian economic situation.**

The interviewees stated that the Russian-Ukrainian war will negatively affect the whole world and that its bad impacts have not been fully noticed yet. They also stated that it is dramatic that the world has not fully recovered from the COVID-19 and Omicron Coronavirus subvariant bad impacts yet. As a result of the trade restrictions in the Black Sea, the whole world will be negatively affected, especially Egypt, as its economy greatly depends on sea imports from Russia and Ukraine. A lot of Egyptian industries and sectors will be affected, which will affect the Egyptian economic situation. However, all the ships that were supposed to operate in the Black Sea will reroute and shift their directions to pass through the Egyptian Suez Canal, which will increase its revenues.

- **The Russian-Ukrainian conflict effect on the products prices and availability.**

The interviewees stated that some products' prices have increased due to the Russian-Ukrainian conflict, such as wheat, yellow corn, and sugar. However, this increase results mainly

from the retailers' and Egyptian suppliers' exploitation. As for the availability, Egypt does not face any shortages of any products and it has sufficient stocks for all products. Moreover, the interviewees declared that there are three major markets that are affected in Egypt including the food market, the tourism sector and the oil and gas industry.

- **The Russian-Ukrainian conflict impact on the Egyptian wheat supply chain.**

The interviewee commented that Egypt depends on wheat imports to a great extent. Due to the Russian-Ukrainian war, there were two huge wheat ships coming to Egypt, and unfortunately, they were affected by the war shrapnel. One of them is totally lost and the other will come to Egypt at any risk without insurance as all the insurance companies have stopped their insurance contracts. However, Egypt has a huge tonnage of wheat that can be sufficient for the coming six months. In addition, in Egypt, there is a problematic mindset that the wheat prices have been increased as a result of the retailer's counterfeit only. There is no economic reason for wheat to increase as the country has a stable demand and sufficient wheat. Moreover, the wheat season is so close that it will solve any shortage that might happen.

- **The Russian-Ukrainian conflict impact on the Egyptian sugar supply chain.**

The interviewee declared that Egypt has no problems with the Egyptian sugar supply chain. In 2020, Egypt will start the largest agricultural industrial project for sugar and corps in the world. In addition to the agricultural areas for sugarcane in upper Egypt which record a huge annual production that satisfies the Egyptian domestic demand.

- **The Russian-Ukrainian conflict impact on the Egyptian corn supply chain.**

The interviewee stated that the Russian-Ukrainian conflict has negatively affected the corn supply chain because of the Black Sea closure as Egypt imports ten million tons of corn annually from Russia and Ukraine. Consequently, all the food industry will be negatively affected as the animals highly depend on the grains as a source of food, and hence, the prices of meat will also increase in the long run.

- **The Russian-Ukrainian conflict impact on the tourism industry in Egypt.**

The interviewee stated that Egypt depends to a great extent on Russian and Ukrainian tourists in the Red Sea resorts; both together are considered the major markets for the Egyptian tourism industry. Especially during COVID-19 pandemic from 2020 to 2022, most of the tourists in Egypt were Russians and Ukrainians. Hence, they were an essential source of foreign exchange earnings and helped Egypt in its recovery process from the pandemic. According to the Russian-Ukrainian conflict, the tourism industry in Egypt has been negatively affected as the number of tourists from Eastern Europe visiting Egypt has noticeably decreased as they fear flying. Moreover, air bans in Russia and Ukraine have forced several airline companies to either suspend or reroute their flights.

- **The Russian-Ukrainian conflict impact on the Egyptian oil and gas supply chain.**

The interviewee stated that the Russian-Ukrainian conflict will benefit Egypt's Liquified Natural Gas (LNG) supply chain. Russia is the world's leading country in exporting LNG, and it is considered a threat to Egypt as well. Due to the Russian-Ukrainian conflict, Egypt can take the opportunity to be the number one exporter of LNG to the whole world because Egypt has achieved self-

sufficiency and has the infrastructure for the transport and handling of natural gas, which includes the pipelines, as well as distribution networks and twenty-nine gas treatment plants, in addition to two LNG facilities.

Though for the petroleum and gas supply chain industry, it could be considered a double-edged sword, the positive impact is that investors will be encouraged to enter the Egyptian oil and gas market and boost discovery and extraction because Egypt has a lot of petroleum sources. Furthermore, the increased global demand for oil and gas has the potential to increase shipping movements through Egypt's Suez Canal. On the other hand, the Russian-Ukrainian crisis imposed many challenges to the Egyptian oil and gas market because of the oil price fluctuations, which require the development of new action plans.

• Suggestions to deal with the Russian-Ukrainian conflict to avoid any losses.

The interviewees agreed on some recommendations that could help in overcoming the negative impacts of the Russian-Ukrainian conflict. First, to use smart technology by creating a secure database to gather the Egyptian government, importers, the Egyptian carriers, and the interested stakeholders from the industry to cooperate and share reliable information to maintain a secure and efficient supply chain. Second, to use Private Public Partnerships (PPP) to cooperate in regional production and shift to exporting rather than importing. Third, to develop and continue the inland infrastructure and support it with logistics services and digitalized platforms. Finally, monitor the retailers' prices to avoid fake price fluctuations.

According to the conducted focus group, and the statistical records, it has been revealed that Egypt has a lot of opportunities and strength points that could positively protect the Egyptian market from being exposed to any shortage or loss due to the Russian-Ukrainian conflict. as well as some weaknesses and threats that could influence and interrupt the Egyptian supply chain's efficiency. Accordingly, all the Egyptian strengths, opportunities, weaknesses, and threats are summarized in a comprehensive SWOT analysis. It could be shown in the following table:

Table 1: SWOT Analysis for the Impact of Russian-Ukrainian War on the Egyptian Market and Supply Chain Interruptions

Strengths	***Weaknesses***
Wheat safety stock. The new agricultural-industrial projects. Government incentives to the Egyptian farmers. New agreements on wheat imports. Hotels offers to the Russian-Ukrainian tourists. The good infrastructure of the Egyptian oil and gas transportation.	Lack of digital supply chain. Lack of digitalized infrastructure. Bureaucratic rules and regulations. Retailers' fraud and exploitation. Absence of efficient logistics services.
Opportunities	***Threats***
The opportunity to be the leading country in exporting LNG. The opportunity of making new partnerships with foreigners to help in the Egyptian oil extractions. The increase of Suez Canal profits.	Shortage of foreign currency if the Russian-Ukrainian tourists stopped their travel to Egypt. Grain shortage. Economic shocks and instability.

Source: By the authors

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Contingency Plans for the Egyptian Market Stakeholders

Contingency Plans for the Egyptian Food Market

- **The Egyptian food industry contingency plan to maintain supply chain processes continuity during the Russian-Ukrainian conflict.**

The interviewees declared that Egypt has implemented several contingency plans. First, Egypt has signed a contract with Romania for a wheat shipment that will be considered as a recovery export country instead of Russia and Ukraine. Moreover, for the wheat imports, Egypt tried to sign a contract with France, but unfortunately, their wheat prices were too expensive, and Turkey has cancelled its exports to the whole world to satisfy its domestic needs. In addition, the Egyptian government will give incentives to its farmers to encourage them to increase grain production and to maintain the prices and availability.

- **The lessons learned from COVID-19 pandemic to maintain the Egyptian food supply chain processes continuity.**

The interviewees stated that COVID-19 pandemic has had a tremendous influence on the food supply chain in general, not only in Egypt. The most important lesson is that Egypt is shifting from being an importing country to being a self-producer country by depending on Egyptian productions. Therefore, agriculture infrastructure investments have taken place in the last couple of years, and a lot of agriculture projects have been constructed to achieve this aim and to be a leading exporting country.

Contingency Plans to the Egyptian Tourism Industry

- **The Egyptian tourism sector contingency plan to maintain tourism level during the Russian-Ukrainian conflict.**

The interviewees declared that the ministry of tourism compelled the Egyptian three-star hotels to accommodate the tourists as well as provide a full board service. Especially the tourists who come from Russia and Ukraine without asking them to pay additional fees to encourage them to travel to Egypt in order to maintain the tourism level. Additionally, the Egyptian hotels have allowed the already existing Ukrainian and Russian tourists to stay in the hotels until they can safely return.

- **The lessons learned from COVID-19 pandemic to maintain the Egyptian tourism levels.**

The interviewees commented that Egypt is counting on the tourism sector by 30% to get an advantage in its foreign currency. During the era of COVID-19, tourism level in Egypt as well as in the whole world has declined as the tourism industry is very sensitive to international and regional crises such as deadly diseases and wars. Accordingly, a return to pre-pandemic tourism growth patterns will take time and Egypt has not totally recovered from COVID-19 effects. However, there are some lessons learned from the pandemic, including: depending more on digital and reliable transformation, crisis resilience in travel and hospitality companies, and encouraging purchase of travel insurance.

Contingency Plans to the Egyptian Oil and Gas Supply Chain

- **The Egyptian oil and gas industry contingency plan to maintain the**

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gasoline and oil prices during the Russian-Ukrainian conflict.

The interviewees declared that Egypt is working on a joint agreement with Cyprus, Israel, and Greece to export gas to maintain its economic status and avoid any negative impacts from the Russian-Ukrainian war. In addition to conducting seminars that help the Egyptian population understand the concept of savings as Egypt consumes a great amount of gas and petroleum on a daily basis.

• The lessons learned from COVID-19 pandemic to maintain the Egyptian tourism levels.

The interviewees mentioned that the oil and gas industry is the major industry that is exposed to uncertainties, global supply chain disruptions, and volatility in demand. According to COVID-19 pandemic that has disrupted the world, some lessons have been derived, including predictability actions, anticipating change in demand, reducing costs, depending on regional production rather than importing from foreign countries, and investing on other sources of renewable energy such as solar energy, hydropower, and wind energy.

Since the unpredictable crises have a severe negative impact on supply chain practices, consequently, the affected stakeholders should rethink their plans and strategies by applying flexible supply chains. According to the findings, there are some problems that the Egyptian stakeholders face that might be a major issue in the long run due to the Russian-Ukrainian war. The following roadmap provides some recommendations that could help in overcoming these problems and help in achieving efficient and proactive performance during crises:

Table 2: Roadmap for Overcoming the Russian-Ukrainian Effects in Egypt and Help in Achieving Efficient and Proactive Performance During Crises

Problems	Recommended Solutions
Prices and demand fluctuations	Use proactive strategies to avoid price fake manipulations. Use price approvals from the government. Maintain product control. Apply data sharing platform to share prices with all interested stakeholders. Government incentives.
High dependence on imports	Encourage regional production. Follow export promotion strategies. Adopt new trade agreements. Government subsidies to domestic businesses.
Lack of Internet of Things (IoT) technology	Upgrade virtual transactions. Develop a digitalized infrastructure. Use artificial intelligence. Develop secure databases.
Lack of crises management strategy	Create contingency plans. Establish monitoring systems. Use proactive strategies. Keep emergency planning up to date.
Local supply chain constraints	Increase flexibility and adaptability measures. Develop new supply chain scenarios and evaluate it. Improve the logistics network. Invest in supply chain planning and control.

Source: By the authors

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Conclusion

In conclusion, this research contributed to knowledge by providing an overview of the current situation of the Egyptian market; especially in three sectors including: food supply chain, oil and gas industry and tourism sector. Obviously, the Russian-Ukrainian war had positive and negative impacts on the Egyptian market as illustrated in the previous sections. Hence, this research provided all the positive impacts and recommended some solutions through a roadmap for the negative impacts such as implementing new strategies for adapting to and dealing with crisis management, renovating production operations plans, and satisfying the market needs.

Furthermore, for further research, researchers could use the roadmap as a guide to investigate each recommended solution and its impact on the market on the long term. In addition, researchers could assess the impact of the Russian-Ukrainian war on other developing countries and consider this research to be a comparative case study.

References

[1] Beaubien, J. (2022). 'Russia's invasion of Ukraine may cause havoc for wheat-importing Mideast nations', *https://www.npr.org/2022/02/25/1082893801/russias-invasion-of-ukraine-may-cause-havoc-for-wheat-importing-mideast-nations*, [Retrieved 2022].

[2] Chaunhan, T. (2020). 'Why Are Warm-Water Ports Important to Russian Security? The Cases of Sevastopol and Tartus Compared', *European, Middle Eastern, & African Affairs*, 57-75.

[3] Cuervo, F., Namen, I., Pabon, F., Palacio, C., (2010). 'Humanitarian crisis: When supply chains really matter', *Conference: 28th International Conference of the System Dynamics Society*, in Seoul, 1, 1-39.

[4] Diallo, M., & Kaswengi, J. (2018). 'In times of crisis: Perspectives and challenges of the 21st century', *Nova Science Publishers, New York*, 1-170.

[5] Dubey, R., & Gunasekaran, A., (2016). 'The sustainable humanitarian supply chain design: Agility, adaptability and alignment', *International Journal of Logistics: Research and Applications*, 19, 62-82.

[6] Elwakkad, D., & Deselnicu, D., (2021). 'Egypt's Participation in the Global Value Chain: A Proposed RoadMap', *International Business Logistics Journal (IBL)*, 1(2), 39-54.

[7] Foreign Agricultural Service, (2022). 'The world's top wheat exporters', *United States Department of Agriculture, https://apps.fas.usda.gov/esrquery/egraph5y.aspx*, [Retrieved 2022].

[8] Galal, H., (2021), 'value of wheat imports in Egypt', *Statista, https://www.statista.com/statistics/1079054/egypt-value-of-wheatimports/#statisticContainer*, [Retrieved 2022].

[9] Hittle, B., & Leonard, M., (2011). 'Decision making in advance of a supply chain crisis', *Management Decision*, 49(7), 1182-1193.

[10] Goshwami, S. (2022, February 26). 'Russia-Ukraine War News- Developments so far, US & Nato Reaction'. *DMER (Digital Mentor for Education & Recruitment)*, https://dmerharyana.org/russia-ukraine-war/, [Retrieved 2022].

[11] Jones, S. (2022). *'Russia's Possible Invasion of Ukraine' Center for Strategic and International Studies*, https://www.csis.org/analysis/russias-possible-invasion-ukraine, [Retrieved 2022].

Volume 2, Issue 2, December 2022 - ISSN 2735-5969
http://dx.doi.org/10.21622/IBL.2022.02.2.083

[12] Karadima, S., (2022), ' What impact will the Russia-Ukraine conflict have on the tourism industry?', *Investment Monitor*, https://www.investmentmonitor.ai/special-focus/ukraine-crisis/russia-ukraine-conflict-impact-tourism-industry, [Retrieved 2022].

[13] Kovács, G., Sigala, I., (2021). ' Lessons learned from humanitarian logistics to manage supply chain disruptions', *Journal of Supply Chain Management*, 57(11), 1-9.

[14] Ponisa, S., Ntalla, A., (2016). ' Crisis management practices and approaches: Insights from major supply chain crises', 3rd global conference on business, economics, management and tourism, 26-28 November, Rome, Italy, 668 – 673.

[15] Puwanendram, D., & Ganeshan, K., (2021). 'Toursim supply chain and crises management' *International Journal of production Research*, 2154-2172.

[16] Singh, D., (2022). ' Russia-Ukraine war: How rising crude oil prices impact us in ways we don't quite notice', *India Today Magazine, https://www.indiatoday.in/world/russia-ukraine-war/story/russia-ukraine-war-how-rising-crude-oil-prices-impact-us-in-ways-we-don-t-quite-notice-1925206-2022-03-14*, [Retrieved 2022].

[17] Swanson, A. (2022). 'Ukraine Invasion Threatens Global Wheat Supply' , *The New York Times*, https://www.nytimes.com/business/ukraine-russia-wheat-prices/, [Retrieved 2022].

[18] Tanchum, M., (2022). 'The Russia-Ukraine War has Turned Egypt's Food Crisis into an Existential Threat to the Economy', *The Middle East Magazine, https://mei.edu/publications/russia-ukraine-war-has-turned-egypts-food-crisis-existential-threat-economy*, [Retrieved 2022].

[19] Terazono, E., Evans, J., Lockett, H., (2022), 'Russia attack on Ukraine set to hit global food supply chains', *financial times, https://www.ft.com/content/c0c9fe20-e219-45d4-b029-2cfbaf86a755*, [Retrieved 2022].

[20] Trading economics, (2022). 'The Egyptian Imported Commodities', https://tradingeconomics.com/egypt/indicators, [Retrieved 2022].

[21] Trading economics, (2022). 'Crude oil prices', https://tradingeconomics.com/commodity/brent-crude-oil .

[22] Tsiamas, K., & Rahimifard, S., (2021). 'A simulation-based decision support system to improve the resilience of the food supply chain', *International Journal of Computer Integrated Manufacturing*, 34(9), 996-1010.

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