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Digital Transformation: Is it the Answer to Enhance Logistics Efficiency – Case of Egypt

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Abstract: The logistics sector has been going through transformative changes, focusing on leveraging digital technologies to enhance operational efficiency and customer experience. In light of this evolution, Egypt introduced NAFEZA in 2018 which serves importers and exporters through two platforms Advanced Cargo Information (ACI) System and Cargo X, respectively. Despite the potential benefits,

the technology adopted in the logistics industry, including Egypt, has faced challenges. This research aims to assess LSPs' satisfaction level with the ACI System during the application, identifying the obstacles and barriers through its implementation to pinpoint areas for potential improvement to optimize its utilization.

Keywords: ACI, ACID, Challenges, Clearance System, Digitalisation, NAFEZA.

Introduction

The second decade of the 21st century is characterized as “the digital age”, marked by exponentially growing technological advancements that have permeated every aspect of business. This area of rapid technological progress has become integral not only to producers and suppliers but also to consumers and logistics service providers. Prominent consultancy firms specializing in supply chain and logistics, such as (Langley, et al. 2002, Kearney 2015), underscore technology's indispensable role in modern logistics (Cichosz 2018). Emerging technologies present strategic opportunities for organizations to cultivate competitive advantages across various functional management areas, particularly in logistics and supply chain management. The extent of success, however, hinges on the judicious selection of appropriate technologies for specific applications and the presence of adequate organizational structure, culture, and management policies (Bhandari and management 2014). Reflecting a global focus on the logistics sector, Egypt has prioritized logistics infrastructure through a series of significant measures in recent years. In 2018, as part of its endeavours to improve logistics service, Egypt launched an ambitious program to enhance the port clearance system by introducing NAFEZA. This system, developed in collaboration with the World Customs Organization (WCO) and the United Nations Conference on Trade and Development (UNCTAD), represents a major step forward in streamlining and modernizing Egypt's logistics capabilities (NAFEZA.gov, 2024).

The importance of the logistics industry cannot be overstated in its impact on various economic aspects such as storage, transportation networks, packaging services, communication and information technology (Sharipbekova & Raimbekov 2018). However, research conducted by (Jalali, Balouei Jamkhaneh et al. 2021) has recognized that customs clearance procedures pose significant obstacles to international trade in Egypt. The outdated and bureaucratic process has resulted in increased costs and time consumption, particularly with the documentation cycle. Nonetheless, digital technologies offer new opportunities for enhancing efficiency as well as coordination within the supply chain network (Korchagina, Kalinina et al. 2020). Furthermore, the solution can also lead towards greater transparency

while addressing issues related to mismanagement & corruption-related conference titles: humanitarian logistics through digitalization perspective (Kafi, Melan et al. 2022).

The conventional method of clearing customs in Egypt.

According to (Jalali, Balouei Jamkhaneh et al. 2021), the documentation needed for customs clearance in Egypt can be a major obstacle as it involves navigating complex requirements from various government agencies with inconsistent information. The process also typically demands physical copies of documents bearing official stamps, requiring multiple duplicates resulting in unavoidable delays (Egyptian Customs Authority, 2022). Concerning time, according to the Egyptian Customs Authority (ECA, 2022), customs clearance involves multiple administrative offices and agencies, resulting in significant time consumption. The Federation of Egyptian Industries (2021) stated that lengthy inspection procedures, a lack of electronic linkage, and policy inconsistencies among authorities can cause customs clearance to take anywhere from two to five weeks.

Digital transformation in the logistics sector

The notion of digital transformation has become a major area of focus in research. (Harris, et al. 2015) highlighted how technologies such as cloud computing and IoT are critical to enhancing multimodal transport systems. (Strange & Zucchella 2017) evaluation revealed the considerable influence that innovations like big data analytics, robotics, and IoT have on global value chains. Meanwhile, (Yang, Fu et al. 2021) recent investigation into the impact of digitalization on logistics performance demonstrated its capability to lower expenses while raising efficacy levels for supply chain management across developed countries by augmenting visibility and control capabilities over workflows procedurally."

Egypt introduced the NAFEZA initiative in 2021 to modernize cargo processing through digitalization to overcome the limitations of conventional port clearance procedures. The program harmonizes data from various ports in Egypt and simplifies operations using the National Single Window for Trade and Advance Cargo Information Declaration, delivering improved effectiveness (NAFEZA.gov, 2024). The ACI System is designed to offer advanced information about cargo arriving and departing, making customs control and security more accessible. It leverages technologies such as Electronic Data Interchange (EDI) for smoother data exchange, better risk evaluation, and seamless custom operations as per NAFEZA.gov.

This study aims to gain insights into the transformative impact of digitalization on logistics operations in Egypt. By comprehensively assessing the ACI system's implementation, this research seeks to identify

challenges and thus provide recommendations to enhance operational efficiency. Furthermore, the study examines potential drawbacks associated with the ACI system, providing a thorough evaluation of its effectiveness and limitations within the Egyptian logistics landscape. The study employs an exploratory approach to investigate Logistics Service Providers' (LSPs) experiences with the Advanced Cargo Information (ACI) system in Egypt. Using a methodology grounded in semi-structured interviews, the research aims to explore the nuanced challenges encountered by LSPs in implementing the ACI system.

Research Results

An inductive data analysis approach was adopted to investigate the impact of digitalisation through the utilisation of the ACI System-NAFEZA on the logistics industry in Egypt, focusing on cost, time, and System reliability. Anonymous coding was applied to refer to the interviewees, and their positions were mentioned without disclosing their identities.

Cost

Advocates highlight its role in enhancing visibility, security, and controlling direct costs such as customs duties, while reducing indirect costs like bribery. AH noted specific benefits such as the elimination of certificate of origin authentication fees, contributing to overall cost reduction. On the contrary, AZ, raised concerns about additional financial obligations, such as annual subscription and transaction fees imposed by NAFEZA. This juxtaposition underscores varying perceptions regarding the system's effectiveness in managing costs within the logistics sector.

Customs Clearance Error

This sub-theme highlights potential errors and failures in the shipment clearance process. HN pointed out that minor errors by system users, such as mismatched shipment documents and invoices, can result in fines or additional fees for importers, underscoring the need for accurate data entry. MSL echoed these concerns, mentioning "technical problems due to complicated customs systems." Despite these challenges, he praised the predesigned speedy process, noting that after the evaluation, clearance can be completed in minutes, and preclearance opportunities before shipment arrival are beneficial.

Duplication of Steps

HN explained the duplication of steps and expressed how difficult it is for the user to deal with the ACI application by mentioning: - "Duplicating and repetitive auditing over documents by different agencies, and institutions...The large number of documents that can be reduced without harming the control over the exports and imports". HN also pointed to the complexity of the steps by mentioning: - "I work for a British company, and the company is in England; they refused to register on CargoX. I asked the

logistics team to fill out the data on CargoX because registering on CargoX is not possible within the country. It is complicated to register from Egypt”.

Time Delay

Despite the NAFEZA System's intent to resolve delays, interviewees highlighted significant issues related to this factor. AZ noted that delays can occur due to system downtime or auditor-related issues, while AH and MS pointed to customs approvals and prolonged clearance times as major bottlenecks. MS further emphasized the impact by comparing pre- and post-NAFEZA clearance times, noting that while the system initially reduced delays, malfunctions can halt operations entirely, leading to additional costs. This underscores the critical need to address and improve the system's reliability and efficiency to mitigate delays.

Conclusion

The NAFEZA System represents a substantial effort to modernize and streamline Egypt's port clearance processes. However, various challenges have emerged hindering its full potential. Interviewees have highlighted critical areas needing improvement, such as system reliability, customs clearance delays, and the complexity of the system. The interview responses analysis revealed several challenges faced by users of the ACI System in Egypt, including timing, documentation, and technicalities. The timing was reported as a significant challenge by both the interviews and survey responses, with delays in the System and slow processing times being the main issues. Documentations were also reported as a significant challenge, with users being required to obtain and enter various documents, such as the invoice, packing list, and commercial registration, to complete customs clearance procedures. Technical difficulties were also reported as a significant challenge, with users encountering errors in the System, slow processing times, and difficulty completing specific steps. The interviews also revealed costs associated with using the ACI System, such as the fee to activate the MTS System and obtaining a token from companies such as Egypt Trust for digital signature.

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