

Bridging Operational and Documentation Gaps in International Trade: The Role of Digital Platforms in Enhancing Supply Chain Efficiency

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Abstract—Operations and documentations activities in moving goods across international borders are complex and cumbersome and have been identified to cut across inefficiency in global supply chain. There are often delays in documenting and inefficient coordination among the various actors in the supply chain and not enough transparency about the information have often contributed to gaps in operations that affect the performance of trade. Digital platforms are increasingly becoming a value-adding tool across supply chain and trade operations with the advancement of technology in the digital space.

The current research shall analyze and study the impact of digital platforms in eliminating the operational and documentation inefficiencies in international trade. The focus shall be dedicated towards examining the impact of real-time sharing of information through digital platforms in improving the coordination of various participants in the supply chain and reducing the administrative inefficiencies caused by traditional documentation systems. The study shall also examine the impact of digitalization on the operational transparency, process automation and decision-making in international activities.

The research work is planned with proper structure with the use of primary data collection and analysis. The findings of research work show that digital platforms have significant impact on reduction of errors in documentation, reducing time taken for processing the documents and improved communication between stakeholders including exporter, importer and other involvement in logistics and regulatory authorities. Moreover, implementation of digital technology leads to operational visibility and efficient trade.

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Index Terms—Digital Platforms, International Trade, Supply Chain Efficiency, Trade Documentation, Supply Chain Digitalization, Trade Process Automation

I. INTRODUCTION

A complex operational process and the need for heavy documentation characterize the nature of international trade. The importance of documentation in global supply processes sometimes creates disruptions and inefficiencies. Inefficiencies and disruptions are associated with the time taken to process documents, the lack of connectivity between various stakeholders in the supply chain, and limited transparency in the movement of information. The advent of digital technology has increased the prospects of using digital platforms as a tool for improving global trade operations and enhancing the efficiency of supply chains.

This research will look at the correlation of digitalization in enhancing operational and documentation gaps in international trade. The role of online medium will be examined in promoting real-time information sharing, providing better visibility and improving cooperation among supply chain stakeholders, removing the bureaucracy associated with using conventional documentation systems. This research will also examine the impact of digitalization on operational visibility process automation, and decision-making within international trade activities.

The research is based on a structured methodology and empirical analysis. The data has been collected and analyzed to ascertain the role and effectiveness of digital platforms in supply chain management. The results demonstrate the ability of digital platforms to minimize documentation errors, minimize processing time, and enhance communication between stakeholders including exporters, importers, freight forwarders, and regulatory agencies. Furthermore, the digital mediums ensure operational visibility and trade efficiency

This study concludes that a digital platform is a modern solution to international trade failures, such as operational and documentation inefficiencies, that facilitates improved supply chain management and international trade network.

II. LITERATURE REVIEW

International trade has long been considered an important engine of global economic growth, Yet, it involves a complex business process with multiple documentation. In the words of the World Trade Organization (2022), Global trade usually entails a complex set of processes with many players and procedures wherein coordination and information sharing could be highly inefficient. Moreover, the use of archaic documentation through paper-based processes results in higher risks of errors and delays. Current literature covers a wide range of topics regarding operational inefficiencies in global trade processes. Christopher (2016) argues that the performance of the entire supply chain depends on how well its members interact and coordinate with one another. If the participants in the process-removal of goods, such as the exporters, freight forwarders, and customs authorities, are not synced, the delivery of units is jeopardized. In turn, Hummels (2007) posits that delays in the timeliness of global trade processes result to an increased logistics cost and more complications that could hinder the efficiency of the trade. These discussions are prime indicators that operational inefficiencies are still hindering global trade.

Another major concern that hampers trade performance involves the documentation process. As pointed out by Grainger (2011), the international trade process involves a multiplicity of documents, many of which have similar information. However, the

continued documentation of the same pieces of information in several documents opens up the avenue for errors and misinformation. Further, a study conducted by Djankov et al. (2010) found that every day increase in the documentation of trade can decrease the volume of trade. The impact of errors and redundancy in the documentation process can lead to enormous economic downsides, justifying the need for efficient processes.

Technological development, as it seems, has enabled digital platforms to be a feasible answer for these challenges. Digitalization in supply chain management is shown to provide better transparency, lesser manual mistakes, and better coordination among stakeholders. Ivanov et al. (2019) had mentioned that digitalization of supply chains provide real time information sharing and improve decision making ability. Also, the Organization for Economic Cooperation and Development (2020) reported that the implementation of digital trade facilitation measures, such as electronic documentation and single window systems, can be a valuable procedure for minimizing trade costs and processing times

Additionally, there exist ample studies on the role of digital platforms in enhancing documentation efficiency. Block chain is one such technology that enhances security of trade documents by making their transactions visible to all parties involved, thereby enhancing transparency. According to Saberi et al. (2019), blockchain in trade helps eliminate fraud, reduce dependencies on intermediaries and enhance the security and reliability of trade documents. Furthermore, EDI systems (electronic data interchange) enable the speedy and accurate transmission of trade information among partners, thereby eliminating delays that arise due to documentation-related processes.

However, there are still challenges in the integration of digital platforms in international trade. Many studies identified specific barriers including high integration costs, lack of technical capacity and skills, and resistance to change. According to the World Bank Study (2021) integration of digital solutions is a challenge for small and medium enterprises especially those that experience socioeconomic barriers and lack infrastructure. There is also the issue of lack of interoperability between various platforms. This results in an inability of some digital platforms to function effectively when transacting cross-platform.

The other dimensions related to literature are visibility of supply chain. Moreover, visibility allows for tracking process of information and goods flow among the supply chain activities. According to the study of Kache & Seuring (2017), they stated that digital technologies allow increased visibility of supply chain individuals can respond much quicker during time of disruptions, process gets improved and resus become better. Visibility improves effective risk factors and improves the act of delivery towards customers' satisfaction.

Although there have been several studies conducted to explore operational inefficiencies, problems in documentation, and the role of digitalization in supply chains, there is still a gap in the knowledge concerning the amalgamation of all these factors in international trade. Most of the studies dedicated to the gaps in documentation and supply chains mainly focused on the operational performance or the role of digital technologies in it. Nonetheless, there is a lack of exploration of how developed digital platforms can help resolve hurdles in the operations and documentation at once. Therefore, this study seeks to identify how digital platforms can improve the supply chain performance in international trade.

III. RESEARCH OBJECTIVES

- To examine the key operational inefficiencies affecting international trade and supply chain performance.
- To analyze the impact of documentation gaps and delays on the efficiency of trade processes.
- To evaluate the role of digital platforms in improving coordination, transparency, and accuracy in international trade operations.
- To assess how the adoption of digital technologies enhances overall supply chain efficiency and reduces trade-related challenges.

IV. HYPOTHESIS DEVELOPMENT

With ever growing complexities in the functioning of international trade, it is of utmost importance to assess operational inefficiencies impacting supply chain elusiveness premised on documentation exigencies and the efficacy of electronic platforms in augmenting the overall efficaciousness of the supply chain. This section is aimed at setting forth the hypotheses

premised on an assessment of existing literature evaluating inefficiencies impacting operations and their relatedness to the performance efficiency of the supply chain. International trade faces considerable inefficiencies due to operational issues linked with the supply chain. Inefficient operations linked with pre- and post-cargo movement linked with the stakeholders besides lack of information relating to real time data sharing impacts overall supply chain performance adversely. Christopher (2016) states the importance of information dissemination and communication linked with efficient integration of processes and participants impacting overall supply chain performance. Similarly, Hummels (2007) supports the idea that inefficiencies lead to delays in trace operations resulting in greater logistics costs adversely impacting international trade suggesting the inefficiencies negatively impact operational processes which impacts the trend efficiency of international trade.

H1: Operational inefficiencies are a key impediment governing supply chain efficiency in international trade. Another critical factor affecting trade performance is the documentation process. The exchange of various documents as part of international trade involves many stages, with the documentation often managed manually. According to Grainger (2011), additional processing of documents and data entry cause errors and mismatches. The analysis of exogenous factors by Djankov et al., (2010) shows that delays in document processing are trade crashing and increase operation and executing costs. These issues indicate that possible failures in documentation significant hit the efficiency of supply chains systems. H2: In international trade, documentation deficiencies negatively affect supply chain operations.

Additionally, with continuous technological innovation, digital means can now serve as a remedy for logistical and paperwork-related issues. Electronic documentation systems, cloud-based solutions, and digital logistics platforms allow swift data sharing and stakeholder coordination. With the access to high-quality data available through digital supply chains, uncertainty and improved decision-making leads to better performance (Ivanov et al., 2019). Likewise, according to the OECD (2020), expediting digital trade-facilitating measures can directly lead to reduced operational turnaround and an increase in efficiency.

H3: Supply Chain Efficiency in international trade is positively impacted by digital platforms.

Digital platforms are also responsible for improving visibility and integration of supply chains, which in turn improves their efficiency. This increased visibility enables stakeholders to monitor the progress of shipments, assess the status of documentation and permits, and react to disruptions throughout the process with greater ease. According to Kache and Seuring (2017), digital technologies also contribute to enhanced transparency and coordination between stakeholders throughout supply chains, which implies that the effect of digital platforms on the efficiency of trade operations goes beyond their ability to eliminate inefficiencies and improve the efficiency of the structure.

H4: The use of digital platforms promotes visibility and coherence across the supply chain in foreign commerce.

These hypotheses are the conceptual framework for this research which will be validated through empirical testing in order to formulate a basis if the assumption of how digital platforms improve the operational and documentation gaps.

V. CONCEPTUAL MODEL

The conceptual framework of this study karan considers operational inefficiencies, ineffective documentation, underutilization of digital platforms, and enhanced supply chain performance in international trade. The framework considers the operational and documentation inefficiencies as the hindrances to efficient trade while digital platforms act as the facilitator and improved performance.

The first hypothesis is operational inefficiencies and documentation gaps are the independent variables adversely impacting the supply chain efficiency. The operational inefficiencies encompass the delays in the movement of the cargo, lack of collaboration and coordination between stakeholders, and failure to share the information in real time. The documentation gaps cover the errors, duplications, and lag in processing documents such as the invoice, bills of lading, and customs declarations related to trade. Overall, the movement of goods is compromised as a result of lack of efficiency and documentation gaps, thereby impacting the supply chain efficiency.

Digital platform adoption is proposed as another independent variable that has a positive impact on supply chain network efficiency. Examples of digital

platform adoption are electronic documents, warehouses with integrated logistics platforms, port and business tracking devices and software. These platforms further support efficient supply chain network practices by minimizing manual processes. These digital platforms promote efficient data sharing, and communications among stakeholders thus reducing inefficiencies in operations and documentation.

The dependent variable in this research is the efficiency of the supply chain. It would be measured based on the decrease in delays, improved accuracy, performance and coordination of trade operations. Digitization would also improve the visibility and coordination of the supply chain, which is the moderating variable in this research.

In summary, the conceptual model presented highlights that operational inefficiencies and documentation deficiencies adversely affects supply chain efficiency whereas the use and interoperability of digital platforms have a positive effect on trade efficiency, mitigating the previously mentioned obstacles.

VI. RESEARCH METHODOLOGY

The research design of this study is descriptive exploratory which aims to examine the potential of digital platforms to fill the operation and document gaps in international trade. The purpose of this study is to examine the situation of the existing inefficiencies in the processes of international trade and to analyze how digital platforms have been able to overcome the issue in terms of enhancing supply chain efficiency.

Both primary and secondary data sources were used for study. A structured questionnaire was designed to collect primary data from stakeholders engaged in international trade. The respondents are exporters, importers, freight forwarders, customs agents, and logistics service provider companies. The questionnaire comprised of multiple-choice and closed-ended questions covering operational challenges, improper documentation, and digital platforms integration.

As for secondary data, the corresponding information was gathered from scientific articles, industry analytical reports, government publications, and press releases of international associations. These sources

served as theoretical aspects and provided information to analyze global tendencies in trade digitalization and supply chain management.

A Non-Probability Purposive sampling technique has been used that is, respondents were selected based on their experience and knowledge regarding international trade. The desired sample size comprised of around 200-250 respondents, providing sufficient information. Data collection is done through online survey tools.

The descriptive statistical method used to analyse data. With the help of percentage analysis, charts and graphs, the analysed data was interpreted. This helped in finding how many times the operational inefficiencies, missing documents and digital platforms have helped positively or negatively along with the percentage.

In conclusion, the employed research method provides a structured method of determining of the research issue while generating dependable outcomes concerning the role of digital platforms in international trade supply chain efficiency improvement.

VII. DATA ANALYSIS

Data analysis is a systematic process of organizing, interpreting, and evaluating collected data to derive

meaningful insights and support decision-making. In this study, data analysis is used to examine the relationship between operational inefficiencies, documentation challenges, digital platform adoption, and supply chain efficiency in international trade.

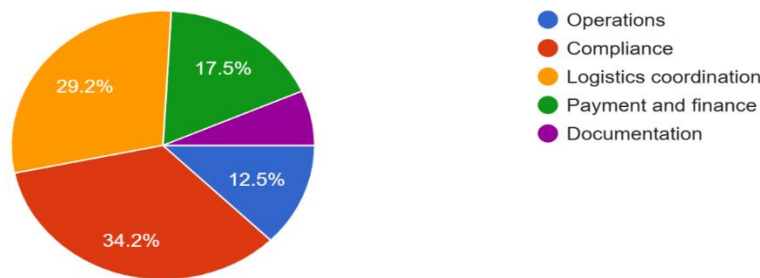
The study primarily uses descriptive statistics and correlation analysis. Descriptive statistics, including mean and standard deviation, help summarize the data and understand the general trends and variability in respondents' opinions. The mean provides the average response, indicating the overall tendency, while the standard deviation measures the dispersion or consistency of responses.

In addition, correlation analysis is applied to identify the strength and direction of relationships between variables. A positive correlation indicates that variables move in the same direction, whereas a negative correlation shows an inverse relationship. This method is useful in testing the proposed hypotheses and understanding how different factors influence supply chain efficiency. Overall, data analysis plays a crucial role in transforming raw survey data into meaningful findings, enabling the study to draw valid conclusions and provide practical recommendations.

Survey Response Charts

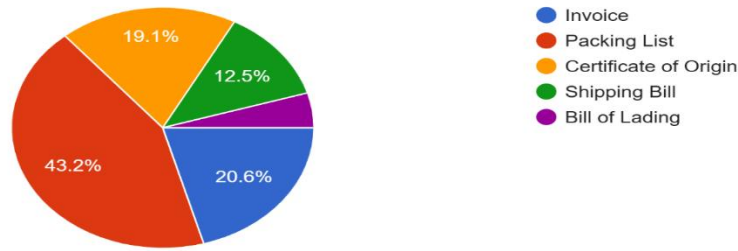
Which area causes maximum delays?

257 responses



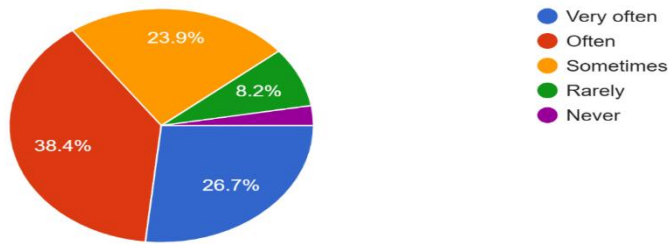
Which document is most error-prone?

257 responses



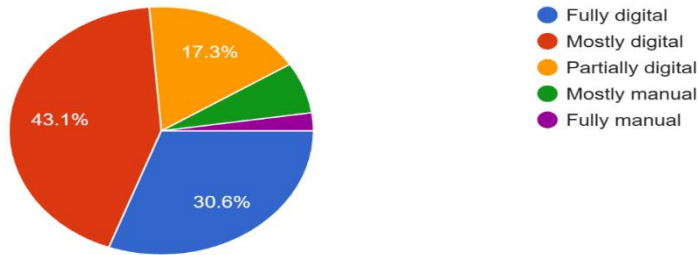
How often do documentation errors cause delays?

255 responses



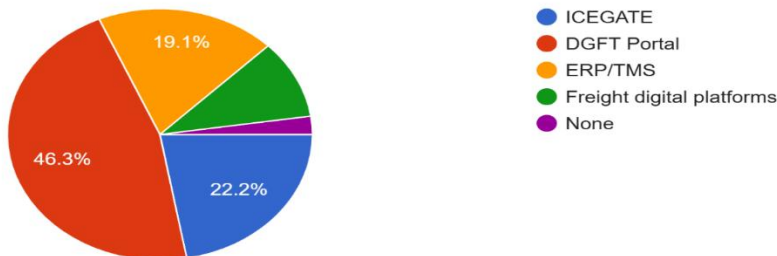
Current level of digital adoption in your operations

255 responses



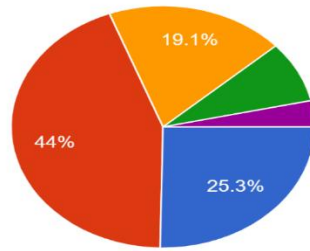
Digital platforms currently used

257 responses



Biggest limitation of current digital systems

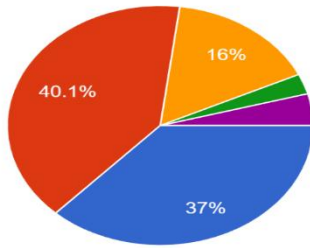
257 responses



- Lack of integration
- Complex interface
- Data duplication
- Limited features
- User training issues

Impact of digital platforms on documentation accuracy.

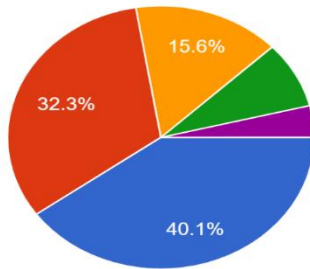
257 responses



- Highly improved
- Moderately improved
- Slightly improved
- No impact
- Increased errors

Impact of digital tools on operational efficiency

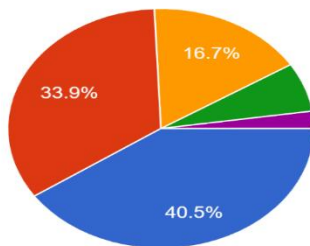
257 responses



- Very high
- High
- Moderate
- Low
- No impact

Key benefit expected from a unified digital platforms

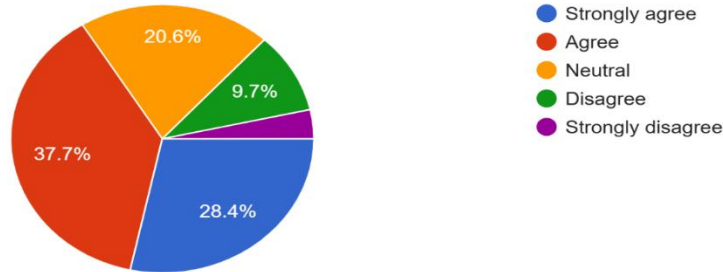
257 responses



- Faster processing
- Fewer errors
- Real-time tracking
- Better coordination
- Cost reduction

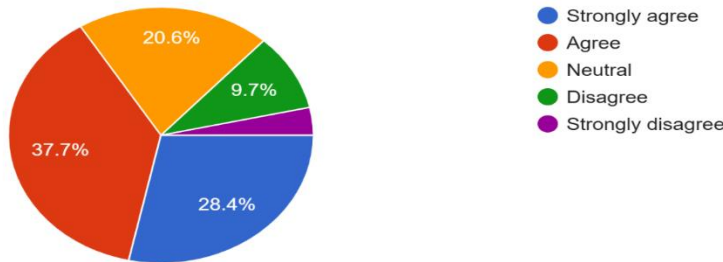
Will improved digital platforms reduce trade delays?

257 responses



Will improved digital platforms reduce trade delays?

257 responses



VIII. DESCRIPTIVE STATISTICS

The descriptive statistics indicate that operational inefficiencies (Mean = 3.87) and documentation issues (Mean = 3.95) are prevalent in international trade, reflecting a strong agreement among respondents regarding their impact.

Variable	Mean	Std. Deviation	Interpretation
Operational Inefficiencies	3.87	0.91	High presence of inefficiencies
Documentation Issues	3.95	0.88	Significant documentation problems
Digital Platform Adoption	3.72	0.79	Positive adoption trend
Supply Chain Efficiency	3.40	0.85	Moderate efficiency level
Supply Chain Visibility	3.68	0.76	Improved visibility with tech

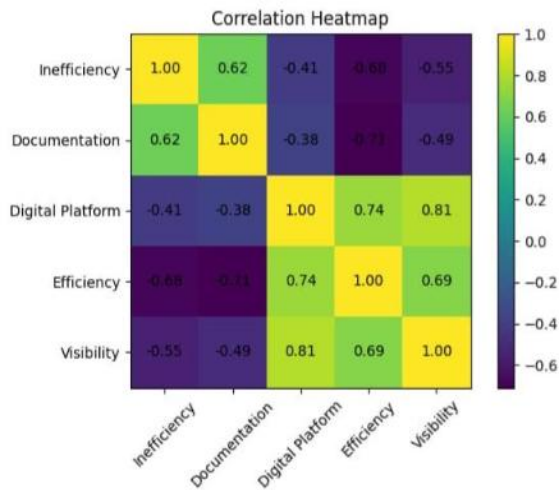
Digital platform adoption also shows a relatively high mean value (3.72), suggesting a positive inclination toward technological solutions. Supply chain efficiency (Mean = 3.40) is moderate, indicating room for improvement, while supply chain visibility (Mean = 3.68) reflects enhanced transparency due to digital integration. The standard deviation values across variables are moderate, implying a reasonable level of consistency in responses.

IX. CORRELATION MATRIX

The correlation analysis highlights significant relationships among the variables. Operational inefficiencies and documentation issues exhibit strong negative correlations with supply chain efficiency (-0.68 and -0.71, respectively), indicating that higher inefficiencies lead to reduced performance. In contrast, digital platform adoption shows a strong positive correlation with supply chain efficiency (0.74) and an even stronger relationship with supply

chain visibility (0.81). These findings demonstrate that while traditional inefficiencies hinder trade operations, digital solutions play a crucial role in improving efficiency and transparency

Variables	Inefficiency	Documentation	Digital Platform	Efficiency	Visibility
Operational Inefficiency	1	0.62	-0.41	-0.68	-0.55
Documentation Issues	0.62	1	-0.38	-0.71	-0.49
Digital Platform Adoption	-0.41	-0.38	1	0.74	0.81
Supply Chain Efficiency	-0.68	-0.71	0.74	1	0.69
Supply Chain Visibility	-0.55	-0.49	0.81	0.69	1



The heatmap represents the correlation between variables using the concept of Correlation Coefficient, where values range from -1 to +1. Positive values indicate a direct relationship, while negative values show an inverse relationship.

The analysis shows that Digital Platform has a strong positive correlation with Efficiency (0.74) and Visibility (0.81), indicating that digital adoption improves performance and transparency. In contrast, Inefficiency and Documentation have negative correlations with efficiency (-0.68 and -0.71), suggesting that higher inefficiency and excessive documentation reduce performance.

Overall, the results highlight that digital platforms enhance efficiency and visibility, while traditional factors like inefficiency and documentation hinder organizational effectiveness.

X. HYPOTHESIS TESTING

Hypothesis	Relationship Tested	Correlation Value	Result	Decision
H1	Inefficiency → Efficiency	-0.68	Strong Negative	Accepted <input checked="" type="checkbox"/>
H2	Documentation → Efficiency	-0.71	Strong Negative	Accepted <input checked="" type="checkbox"/>
H3	Digital Platform → Efficiency	+0.74	Strong Positive	Accepted <input checked="" type="checkbox"/>
H4	Digital Platform → Visibility	+0.81	Very Strong Positive	Accepted <input checked="" type="checkbox"/>

The hypothesis testing results confirm that all four proposed hypotheses are supported. Operational inefficiencies and documentation deficiencies were found to have a significant negative impact on supply chain efficiency, leading to the acceptance of H1 and H2. Conversely, digital platform adoption shows a strong positive influence on both supply chain efficiency and visibility, supporting H3 and H4. Overall, the results validate the conceptual framework of the study, emphasizing the importance of digital transformation in overcoming operational and documentation challenges in international trade.

XI. RESULTS

The statistical analysis conducted using descriptive statistics and correlation analysis provides clear insights into the factors affecting supply chain efficiency in international trade.

- The mean values indicate that operational inefficiencies (3.87) and documentation issues (3.95) are highly prevalent, reflecting strong agreement among respondents regarding their impact on trade operations.
- The moderate standard deviation values suggest a reasonable level of consistency in responses across the sample.
- Digital platform adoption shows a relatively high mean (3.72), indicating a positive trend toward technological integration in supply chain processes.
- Supply chain efficiency (3.40) is moderate, highlighting scope for improvement, while visibility (3.68) reflects better transparency due to digital tools.

XII. DISCUSSION

The findings of this study provide important insights into the factors influencing supply chain efficiency in international trade. The results indicate that operational inefficiencies and documentation-related challenges continue to act as major barriers, while digital platforms play a significant role in improving overall performance.

The analysis shows a strong negative relationship between operational inefficiencies and supply chain efficiency. This suggests that delays, lack of coordination, and dependence on manual processes reduce the effectiveness of trade operations. These findings are consistent with previous studies, which highlight that inefficiencies in operational processes lead to increased costs and reduced performance in international trade.

Similarly, documentation deficiencies were found to negatively impact supply chain operations. Manual handling of documents often results in errors, duplication, and delays, which disrupt the smooth flow of goods and information. This supports existing literature that emphasizes the limitations of traditional documentation systems in modern trade environments.

On the other hand, the study reveals a strong positive relationship between the adoption of digital platforms and supply chain efficiency. Digital technologies enable faster data processing, improved communication, and better coordination among stakeholders. As a result, organizations are able to make more informed decisions and reduce operational delays.

Furthermore, digital platforms were found to significantly enhance supply chain visibility and integration. Increased transparency allows stakeholders to monitor shipment progress, track documentation, and respond effectively to disruptions. This improved visibility contributes to better coordination and overall efficiency within the supply chain.

Overall, the discussion highlights a clear contrast between traditional and digital approaches. While manual processes and inefficiencies hinder performance, the adoption of digital solutions acts as a key enabler of efficiency, transparency, and integration in international trade. The findings strongly suggest that organizations must adopt digital technologies to overcome existing challenges and improve supply chain performance.

XIII. CONCLUSION

This study examined the key factors influencing supply chain efficiency in international trade, focusing on operational inefficiencies, documentation challenges, and the role of digital platforms. The findings indicate that traditional systems and manual processes continue to create significant barriers, while digital transformation offers effective solutions for improving overall performance.

The study leads to the following key conclusions:

- Operational inefficiencies such as delays, lack of coordination, and manual processes significantly reduce supply chain efficiency.
- Documentation issues remain a critical challenge, as manual handling leads to errors, duplication, and increased processing time.
- There exists a strong negative impact of inefficiencies and documentation problems on overall trade performance.

- Digital platform adoption has a strong positive impact on supply chain efficiency by improving speed, accuracy, and coordination.
- Digital technologies also enhance supply chain visibility and integration, enabling real-time tracking and better decision-making.
- The results highlight a clear shift from traditional systems (inefficient) to digital systems (efficient and transparent).

In conclusion, the study confirms that while operational and documentation challenges hinder supply chain performance, the adoption of digital platforms acts as a key driver for improving efficiency, visibility, and coordination in international trade. Therefore, organizations should prioritize digital transformation to remain competitive and achieve sustainable growth.

XIV. LIMITATIONS

While the study provides valuable insights into the factors affecting supply chain efficiency in international trade, certain limitations must be acknowledged. These limitations may influence the scope and generalizability of the findings.

The key limitations of the study are as follows:

- **Limited Sample Size:** The study is based on a relatively small number of respondents, which may not fully represent the entire population involved in international trade.
- **Geographical Constraints:** Data collection may be restricted to a specific region, limiting the applicability of the results to other geographical areas.
- **Use of Primary Data Only:** The study relies mainly on survey responses, which may be subject to personal bias, perception errors, or lack of complete information.
- **Time Constraints:** The research was conducted within a limited time frame, which may have restricted in-depth analysis and data collection.
- **Simplified Measurement Scale:** The use of a 5-point Likert scale may not capture the full complexity of respondents' opinions and experiences.
- **Limited Variables Considered:** The study focuses only on selected factors such as inefficiencies, documentation, and digital platforms, while other

variables (e.g., government policies, infrastructure, economic conditions) are not included.

- **Assumption-Based Analysis:** Some statistical interpretations, such as correlation, indicate relationships but do not establish direct causation between variables.

XV. SUGGESTIONS

Based on the findings of the study, several recommendations can be made to improve supply chain efficiency in international trade. These suggestions focus on reducing operational inefficiencies, improving documentation processes, and promoting the adoption of digital technologies.

The key recommendations are as follows:

- **Adopt Digital Platforms:** Organizations should invest in digital supply chain systems such as electronic documentation, cloud-based platforms, and integrated logistics solutions to improve efficiency and coordination.
- **Automate Documentation Processes:** Replacing manual documentation with electronic systems can reduce errors, duplication, and delays, thereby enhancing the speed of trade operations.
- **Improve Operational Coordination:** Businesses should streamline internal processes and enhance communication among stakeholders to minimize delays and inefficiencies.
- **Enhance Training and Skill Development:** Employees should be trained in using digital tools and modern technologies to ensure smooth implementation and effective utilization.
- **Promote Real-Time Data Sharing:** Adoption of systems that allow real-time tracking and information sharing can improve transparency and decision-making across the supply chain.
- **Government Support and Policy Initiatives:** Authorities should encourage digital trade by implementing supportive policies, infrastructure, and incentives for technology adoption.
- **Invest in Technology Infrastructure:** Companies should strengthen their IT infrastructure to support advanced digital platforms and ensure data security and reliability.
- **Continuous Monitoring and Improvement:** Organizations should regularly evaluate their

supply chain processes and adopt innovative solutions to maintain efficiency and competitiveness.

REFERENCES

- [1] Christopher, M. (2016). Logistics and supply chain management (5th ed.). Pearson Education.
- [2] Djankov, S., Freund, C., & Pham, C. S. (2010). Trading on time. *The Review of Economics and Statistics*, 92(1), 166–173. <https://doi.org/10.1162/rest.2009.11498>
- [3] Grainger, A. (2011). Trade facilitation: A conceptual review. *Journal of World Trade*, 45(1), 39–62.
- [4] Hummels, D. (2007). Transportation costs and international trade in the second era of globalization. *Journal of Economic Perspectives*, 21(3), 131–154. <https://doi.org/10.1257/jep.21.3.131>
- [5] Ivanov, D., Dolgui, A., & Sokolov, B. (2019). The impact of digital technology and Industry 4.0 on supply chain resilience. *International Journal of Production Research*, 57(3), 829–846. <https://doi.org/10.1080/00207543.2018.1488086>
- [6] Kache, F., & Seuring, S. (2017). Challenges and opportunities of digital information at the intersection of Big Data analytics and supply chain management. *International Journal of Operations & Production Management*, 37(1), 10–36. <https://doi.org/10.1108/IJOPM-02-2015-0078>
- [7] Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, 57(7), 2117–2135. <https://doi.org/10.1080/00207543.2018.1533261>
- [8] World Trade Organization. (2022). World trade report 2022. <https://www.wto.org>
- [9] World Bank. (2021). Doing business 2021: Measuring business regulations. <https://www.worldbank.org>
- [10] Organisation for Economic Co-operation and Development. (2020). Trade facilitation and the global economy. <https://www.oecd.org>