Logistics Risks in Distribution of Products in Ogun State Nigeria

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ABSTRACT

In many parts of the world, the consumption of a certain product is not in the same place as the production of that product. In fact, the more likely case is that they are geographically apart from one another. Production is only said to be completed if and only if goods reach the final consumers.

This study employed survey research design. The questionnaires were used to seek information concerning the key logistics risks, effects of logistics risks and relationship between logistics risk-induced distribution disruptions and economic growth variables and contribution of technological and infrastructural advancements in reducing logistics risks.

Student T-test was used to examine the difference in key logistics risks, correlation was used to determine relationship between logistics risk-induced distribution disruptions and economic growth and regression analysis used to establish the effects of logistics risks on the product distribution. The r^2 results showed that 87.2% of the product distribution within Ifo local government is affected by the six explanatory contributing logistics risks variables. Supply Chain and Sourcing Problems posed the most hindrance (86.35%) and Transportation Delays has (83.73%) potent value as logistics disruptions while Demand and Seasonal Fluctuations show high acceptability at 78.21%. The study recommended that effective demand forecasting, resilient supply chain strategies, real-time visibility, and contingency planning will go a long way in addressing the logistics-induced distribution disruptions issues as well as strategies like developing multiple sourcing and distribution channels of relying on multiple suppliers and routes will minimize disruption risks and make it easier to adapt to unexpected obstacles in the supply chain.

(Keywords: economic growth, logistics, sustainability, risk, distribution)

INTRODUCTION

The value chain of an organization is the combination of all activities from the procurement of materials from suppliers to the distribution of the finished goods to the end user. The value chain incorporates all activities that need to be carried out before a final consumer receives a final product. Many organizations recognize that logistics needs to be positioned to play a strategic role, an economic role as well as an operational role in their efforts to gain a sustainable competitive edge. Logistics is a part of an organization's supply chain and typically includes the coordination of product usage with other activities like material handling, packaging, transportation, warehousing, inventory management and control (Coyle, Bardi and Landgley, 2018).

In many parts of the world, the consumption of a certain product is not in the same place as the production of that product. In fact, the more likely case is that they are geographically apart from one another. Production is only said to be completed if and only if goods reach the final consumers (Chew, 2018). The production needs to be assembled, branded, stored, packaged while orders are processed and documented prior to transportation or delivery. Transportation is used to affect the movement of cargo from one point on the globe to another. In particular, the physical goods in the supply need to be moved from one node to another along the supply chain by a method known as logistics transportation (Odimarha, Ayodeji, and Abaku, 2024).

Logistics risks are negative adverse events and disruptions on transportation, warehousing, and

distribution of commodities. These risks have the potential to significantly affect business operations, customer satisfaction and profitability and can arise at any point in the supply chain. There are several potential sources of logistics risk, and these include internal operations, external variables, and environmental impacts. Logistics risks are the unexpected, unwanted event or the cause for this event of not having the right material at the right time in the right quality at the right place at the planned price which it causes can be physical or not virtual nature due to mistakes or the disruption of either the material flow or the related information flow (Blumberg, 2010).

Economic growth is the progressive increase in the output of goods and services produced by an economy. The increase in a nation's Gross Domestic Product (GDP), which is the entire value of all products and services produced there, is a typical way to quantify it. An economy's ability to produce more goods and services, which raises income levels and raises living standards for its citizens, is referred to as economic growth.

However, economic growth requires efficient networks for logistics and distribution. Increased expenses, a shortage of products, and a drop in productivity are all consequences of delays or interruptions that can hinder economic expansion as results of logistics risks. More importantly, businesses and policymakers can find strategies to improve economic resilience by looking at the connection between logistical risks and economic performance. In order to maintain profitability and continuity, businesses must manage risks. Businesses can improve their resilience and competitiveness in the market by developing stronger risk management strategies by looking at how logistics risks impact product distribution.

The ideal situation for product distribution logistics to support economic growth consists of several essential elements that provide effectiveness, reliability, and resilience in the supply chain. Strong regulatory frameworks, competent labor, cutting-edge technology, efficient risk management, and a solid infrastructure are some of these components. The perfect logistical scenario involves efficient and effective transportation networks, warehousing facilities, information control, skilled manpower and labor and related resources. The inability of the logistics process to produce these indices disrupts the process.

Logistics disruptions can be seen as a shock to trade liberalization, which has been shown to be positively associated with economic growth. Different consequences of liberalization, like exports, have also been shown to spur economic growth. The adverse impacts on output from breakdowns in production logistics are susceptible to where the weakest chain links are and the underlying complementarity in production stages (Salvatore, 2020).

The problem is in the need to identify, investigate, and mitigate certain logistics risks that result in disruptions to the distribution of products. Understanding how these disruptions affect the status of the economy is also crucial. Without this information, developing nations could find it difficult to maximize their economic potential and streamline their logistics processes. By examining the complex interaction between logistics risks, product distribution, and economic growth, this study seeks to close this knowledge gap.

LITERATURE REVIEW

Meijuan (2023) studied the risk and value of logistics industry by examining the effects of coronavirus epidemic in 2020 and the Russia-Ukraine conflict in 2022 as well as observing vulnerability and disruption of the supply chain risks in terms of theft, pilferages and security breaches during transportation and warehousing processes. He further suggested that logistics industry can ensure the security of goods and information by utilizing cutting-edge technologies, adopting forward looking risk management methods, and promoting cooperation with stakeholders as well as navigating a dynamic business environment by establishing effective governance mechanisms and regular reviews, financial analysis of several representative companies in the logistics industry.

Choi, Wen, Sun, and Chung (2019), collected relevant data, sorted out relevant literature, and found that the biggest risk facing the global logistics industry is the current shortage of skilled workers and high labor costs. Second is the risk of cybercrime, and third is the risk of supply chain disruption. When it comes to

specific risks to individual companies, individual companies are also exposed to these risks.

Li, Gong, Wang, and Liu (2023), found that digitization revealed a series of defects in transportation and transportation companies, which made companies vulnerable to cyber-attacks. They also found that the logistics industry is at greater risk of cyber-attacks due to the expanded use of operational technologies, lagging cyber regulations and standards, lack of cyber security awareness and a shortage of cyber defense talents.

Atayah, Dhiaf, Najaf, and Frederico (2022), reviewed some disruption events in the logistics industry, such as labor events, geopolitical events, corporate governance events, extreme weather events and drought events. They found that the logistics industry is a large and growing industry that promotes the flow of goods and services between different regions and modes of transportation. The source of supply chain risks in the logistics industry in 2020 is the COVID-19 pandemic.

Wilson, Paschen, and Pitt (2022), studied the impact of the COVID-19 pandemic on the global economy and found that the COVID-19 pandemic caused countries to take lockdown measures, which led to logistics obstruction, supply chain disruption, supply and demand decline, and thus global economic decline. When most of the lockdowns ended in 2021, supply fell short of demand as supply chains did not recover as quickly, leading to inflation.

Abdel-Basset, Gunasekaran, Mohamed, and Chilamkurti (2019), analyzed the risks facing the logistics industry and the potential risk solutions. They found that if block-chain technology can be applied to the logistics industry, it will improve the transparency of the logistics industry, improve the efficiency and elasticity of logistics companies, and reduce risks to a certain extent, thus improving the operating profit and value of the logistics industry.

In respect to operational efficiency, Somuyiwa, Odepidan, and Dosunmu (2016), explored the multiple operations that manufacturing firm contracted out in order to meet customer demand and satisfaction in Nigeria and it was revealed that the importance of transportation operations in sustaining high customer satisfaction and repeat business is essential. They further claimed that this is brought about by the comparative advantages of lower freight costs, fewer inventory in transit, and superior production scheduling as a result of increased transportation visibility and it was also learnt that businesses producing goods or services outsource auxiliary or ancillary services at different stages of their operations, with hauling or redistribution of their goods being the most outsourced, indicating that transportation is an important aspect of business operations for manufacturing firms because it is necessary at every stage. Similar to how demand and supply have evolved into global practices, businesses that operate in a global or international setting must have a short lead time and throughout the distribution process, it is crucial to provide sufficient geographic coverage while also satisfying client demand.

Orji, Kusi-Sarpong, Huang, and Vazquez-Brust (2020), proposed a logistics service network design framework under uncertainty and disruption risk in view of some possible risks in the logistics industry, especially supply chain disruption caused by COVID-19. They developed a robust optimization model that takes into account demand uncertainty and outages. They also conducted a case study to illustrate the applicability and effectiveness of their approach.

Choi (2021), explored the risk management of logistics systems in several key areas, such as disruption risk management, operational risk control, disaster and emergency management, etc. He put forward the future research direction of promoting the risk management of logistics systems and believed that risk mitigation can be achieved through risk avoidance (such as using new suppliers), risk transfer (such as buying insurance), and risk retention (such as logistics companies may decide to retain some risks with low probability or impact or risks that are too expensive or impractical to mitigate) and other ways to control risk

Goel, *et al*. (2021), analyzed the relationship between logistics and economic growth using panel data from different OECD countries. It was found that the logistics industry has a significant positive impact on economic growth. The logistics industry can not only promote the development of the domestic economy but also promote global trade, deepen the closeness of

global countries, and facilitate the deeper communication and exchange of global culture.

Zhang and Chen (2020), found that the logistics industry has positive social impacts in various aspects, such as environmental sustainability, social inclusion and human development. The logistics industry has worked hard to reduce its environmental impact by adopting green measures such as optimizing routes, reducing emissions, improving fuel efficiency and using renewable energy sources. The logistics industry also promotes social inclusion and equity by providing goods and services to underserved populations and regions, particularly in rural areas and developing countries. The logistics industry also supports human development by enhancing the education, health, and well-being of its employees and customers through training, safety, and health programs.

Chen and Chen (2013), studied the impact of financial and operational risks on enterprise value in the logistics industry from 1993 to 2006 and found that the financial and business risks of logistics companies are essential determinants of enterprise value. The higher the financial and operating risks, the lower the enterprise value.

Ejem, Uka, Dike, Ikeogu, Igboanusi, and Chukwu (2021), investigated Nigerian Breweries, Nigerian Bottling Company (NBC), AG Leventis, Kobo logistics, and Flour Mills of Nigeria (FMN) using multi-criteria decision-making methods based on price, degree of service, financial standing, standing in the community, and long-term relationships to examine the decision-making in evaluation and selection of 3PL.

Sevgi and Tezcan (2017), examined the impact of logistics industry on economic growth through investigation of 34 OECD countries which are group into two namely railroad and airline freight volumes and econometric model, telecommunications and communications variables. The results show that there is no significant correlation between railroad freight transportation and economic growth while infrastructure investments in terms of airline freight transportation, the length of highway network and the length of railroad network were effective on economic growth.

Töyli, Engblem, and Ojala (2016), used data from 223 firms in Finland to analyze the relationships between outsourcing logistics, spending and performance, financial performance and business outsourcing in small businesses, as well as the current state and future goals of outsourcing logistics. While outsourcing is most likely to succeed in the study region in the fields of information technology, value-added services, and materials management, enterprises that export to medium-sized businesses may incur greater logistical costs than other businesses. The majority of the businesses were found to not have outsourced or billed orders, and half of the businesses stated they had not yet implemented IT logistics outsourced systems. Additional research has shown that there are no observable negative or good effects of outsourcing on logistical performance, and companies should concentrate on their own distinctive qualities to decide whether or not they may externalize their logistics.

Rahmana, Ahsana, Yang, and Odgers (2017), conducted a study to identify and prioritize the crucial difficulties faced by international third-party logistics providers operating in China. Five executives from five major third-party logistics organizations took part in the study. The analytical hierarchy process (AHP) approach was used to analyze the data in order to assess the challenges. It was found that the customer service-related issues like legal restrictions, price pressure, and transportation costs posed the greatest challenges. 54.2% of total logistics costs in China are accounted for by the average cost of transportation (KPMG, 2016), to improved distribution infrastructure, the Chinese government has recently made large investments in the logistics sector. Transport expenses are, however, made more expensive by a lack of adequate logistics infrastructure, a high rate of transit damage, gridlock at ports and on industrial routes, and inconsistent policies and regulation.

Chu and Liu (2013), investigated Henan Province, China from 1990-2010. They used regression analysis. It was determined that logistics industry had a positive effect on economic growth in Henan Province. However, it was also mentioned that scrutinized variables did not reflect the logistics industry adequately and further studies that would include other factors that represent the logistics industry and policy recommendations are needed.

Hu, *et al*. (2012), investigated correlation between logistic infrastructure investments and regional economic growth was scrutinized in central China. They used times series analysis. Based on co-integration analysis conducted in the study, three co-integration correlations were found between the variables. Based on Granger causality analysis results, it was observed that there was a one-way causality from logistic infrastructure investments to GDP and two-way causality between logistic infrastructure investments and acceleration value of logistics.

METHODOLOGY, RESULTS, AND DISCUSSION

Hypothesis Testing

The null hypothesis stated that logistics risks do not have influence on product distribution in the study area while alternative hypothesis implies that logistics risks do have influence on product distribution in the study area.

MODEL (PRD) = $a_o + \beta_1(WAR) + \beta_2(PAN) + \beta_3(TAP) + \beta_4(SEC) + \beta_5(CYB) + \beta_6(LAB) + \beta_7(OTH) + \varepsilon$

Where **(PRD)** is the Product Distributed within the Study Area

(WAR) is War as a Logistics Risks of Product Distribution

(PAN) is Pandemic events as Logistics Risks of Product Distribution

(TAP) are Theft and pilferages as Logistics Risks of Product Distribution

(SEC) is Security breaches as Logistics Risks of Product Distribution

(LAB) is labor inexperience and inadequate as Logistics Risks of Product Distribution

(OTH) are other events that function as Logistics Risks of Product Distribution

The use of the adjusted measure leads to a revised estimate that 87.2% of the product distribution **(PRD)** within Ifo local government is affected by the six explanatory contributing logistics risks variables. This implies that, the six key logistics risks variables together affected 87.2% of the variations of the product distribution **(PRD)** within Ifo local government while about 12.8% observed relationships are not captured by the selected logistics risks variables as shown in Table 1. More importantly, the output shown in Table 1 also provides estimates of the regression coefficients, standard errors of the estimates and *t*-tests that a coefficient takes the value zero.

Table 1: Summary of Coefficient of Regression and ANOVA of the combination of the Logistics Risks on Product Distribution

Dependent Variable is Product Distribution (PRD)	Coefficient	Std Error	t - Statistics	Prob.
Constant	0.312	0.113	2.299	0.002
War (WAR)	- 0.013	0.523	-3.212	0.127
Pandemic (PAN)	-0.241	0.383	-5.182	0.082
Theft and Pilferage (TAP)	0.892	0.317	1.142	0.000
Security Breaches (SEC)	2.134	0.411	2.123	0.015
Cybercrime (CYB)	0.415	0.191	2.491	0.004
Labor Inexperience (LAB)	3.182	0.422	3.652	0.001
Others (OTH)	2.341	0.276	1.124	0.018
R	0.934			
R – Squared	0.872			
Adjusted R – Squared	0.914			
F – statistics	41.01			
Prob. F – statistics.	0.001			
Dependent Variable: Product Distribution, Predictors: (Constant), WAR, PAN, TAP, SEC, CYB, LAB, OTH				

Source: Author's Field Survey, (2024)

The predicted change in the dependent variable when the explanatory variable is increased by one unit when other conditional variables in the model remaining constant. For instance, the estimate that the product distribution within the local government **(PRD)** is increased by 0.892 for every additional score on theft and pilferage **(TAP)** scale (or by 8.92 for an increase of 10 units **TAP** scale) provided that all other contributors are the same.

Similarly, the estimated effect for a ten-unit increase in Security breaches **(SEC)** is 21.34 as well as 4.15 on Cybercrime **(CYB)** scale. More importantly, product distribution within the local government **(PRD)** will consequently increase by 3.182 and 2.341 for every additional score on labour inexperience and inadequate **(LAB)** and other variables such as geopolitical events, **(OTH)** scales respectively (or by 31.28 and 23.41 for an increase of 10 units **LAB** and **OTH** scales) provided that all other contributors are the same.

Also, there will be a consequential decrease of 0.103 and 0.241 in **PRD** score for every one unit increase in logistics risks of war **(WAR)** and pandemic **(PAN)** or 1.03 and 2.41 on the scale of WAR and PAN respectively as indicated in similar Table 1 of the study.

MODEL (PRD) = 0.312 – 0.013(WAR) – 0241(PAN) + 0.892(TAP) + 2.134(SEC) + 0.415(CYB) + 3.182(LAB) + 2.341(OTH) + ε

The regression model of the study helps to eliminate the independent variables of logistics risks that do not make meaningful impact to the influence of the dependent variable of production distribution. The independent variables (β_1, β_2, β_3, β_4, β_5, β_6 and β_7) are the predictors and coefficient sign of predictors and β_3, β_4, β_5, β_6 and β_7 are positive while for β_1 and β_2 are negative as shown in the Table 1.

In the order of critical influence on the production distribution, the logistics risks with the highest "t value" impacted the product distribution severely, in other words, labor inexperience and inadequate **(LAB)** impacted production distribution (**PRD**) more than any other logistics risks follow by **(OTH), SEC, TAP** and **CYB**.

The "ANOVA" result in Table 1 provides an *F*-test for the null hypothesis that none of the logistics risks variables have impact on **(PRD)** within the local government or in other words, that R^2 is zero. Therefore the study clearly reject the null hypothesis {F = 41.01, p = 0.001}, and so conclude that at least one of **(WAR), (PAN), (TAP), (SEC), (CYB), (LAB)** and **(OTH)** is related to the **(PRD)** of Ifo local government product distribution. In this regards the null hypothesis is rejected and alternative hypothesis accepted which implies that logistics risks do have influence on product distribution Ifo Local Government.

It can also be inferred from the model results that theft and pilferage β_3TAP(0.892), β_4SEC(2.134), β_5CYB(0.415), β_6LAB(3.182) and β_7OTH(2.341) have serious and severe impact on product distribution **(PRD)** of Ifo local government product distribution and are significant as their t-value 1.142,2.123, 2.491, 3.652 and 1.124 accordingly at 0.005 level of significant. This implies that there are other factors which contribute in predicting the product distribution **(PRD)** of the local government other than war, pandemic, theft and pilferages, security breaches, cybercrime, labor inexperience and inadequate which could be for further investigation.

Logistics Risk-induced Distribution Disruptions and Economic Growth

The study revealed that transportation delays, supply chain issues, and demand fluctuations are the most significant logistics risks-induced, while infrastructure limitations and technology failures are perceived as less influential in the study area. The study, however, categorized logistics risk-induced distribution disruptions into three namely most significant disruption, least significant disruption and moderate significant disruption.

The most significant disruption was *Supply Chain and Sourcing Problems* (86.35%) and *Transportation Delays* (83.73%) are the most accepted as significant logistics disruptions as well as *Demand and Seasonal Fluctuations* also shows high acceptability at 78.21% while **least significant disruption are** *Infrastructure Limitations* (91.34%) and *Technology and IT Failures* (72.96%) are viewed as less impactful factors in distribution disruptions and **moderate significant disruption includes** *Inventory Management Issues* (63.25%) and *Labor Shortages and Strikes* (60.63%) have moderate acceptability, indicating they are seen as relevant but not overwhelming disruption factors.

The breakdown shows that certain disruptions like transportation delays and supply chain issues are widely accepted as core logistical challenges; whereas others like infrastructure and technology failures have low perceived impact in Ifo Local Government.

Transportation Delays (TRD) in the study area **constituted traffic congestion** within the urban areas or on popular routes as they delay deliveries; **weather conditions that causes** severe weather events such as floods, snowstorms which can make certain routes impassable or slow down transportation; **accidents** on road can also halt the flow of goods temporarily as well as l**imited transportation options with some locations within the local government** may limit transportation modes (like rail or air) and hence creating bottlenecks. It is widely recognized that transportation delays has a significant disruption, with a high acceptability of 83.73% as shown in Table 2. This suggests that a large portion of respondents consider transportation delays a critical factor affecting distribution in the area. The relatively low unacceptability indicates that there is broad consensus on the impact of this factor.

Infrastructure Limitations (IFL) This is c**entered on warehouse capacity constraints in terms of the fact that** when warehouses are full, it can lead to delays in inventory management, impacting delivery timelines and also due to **inadequate roads and facilities such as** poor infrastructure, like narrow roads or weak bridges, limits vehicle size and capacity and can delay distribution. It was observed from the study that it is largely seen as non-significant, with only 8.66% of respondents finding it impactful as indicated in Table 2. The high unacceptability score of 91.34% suggests that most people do not consider infrastructure issues a substantial logistics risk, which may reflect relatively well-developed infrastructure in the area or other factors that make it a low concern.

Inventory Management Issues (IMI) is a fundamental logistics risks induced disruptions as it resulted into **stock outs or overstocks because of** inefficient inventory management which can result in items not being available for shipping or having too much inventory, leading to storage delays. More so, **poor demand forecasting due to** inaccurate demand forecasts cause disruptions by creating excess inventory or unplanned shortages as well as **inventory shrinkage as a result of** theft, damage, or loss of goods in the warehouse or transit can disrupt the flow of goods.

Supply Chain and Sourcing Problems (SSP) is another critical problem which involve **supplier delays** such as delays from suppliers, due to production issues or transport problems, disrupt the delivery schedule; **global supply chain risks because of** geopolitical tensions, trade restrictions, or tariffs can impact the timely movement of goods across borders and **dependency on limited suppliers** such as relying on a single supplier or region increases the risk of disruptions if issues arise in that specific area. The study observed that SSP is widely considered significant, with 86.35% acceptability. The high level of agreement suggests that disruptions in the supply chain and sourcing are commonly experienced and seen as impactful in the distribution process.

Table 2: Logistics Risk-induced Distribution Disruptions.

Variables	Acceptability (%)	Unacceptability (%)
Transportation Delays (TRD)	83.73%	16.27%
Infrastructure Limitations (IFL)	8.66%	91.34%
Inventory Management Issues (IMI)	63.25%	36.75%
Supply Chain and Sourcing Problems (SSP)	86.35%	13.65%
Labour Shortages and Strikes (LSS)	60.63%	39.37%
Technology and IT Failures (TIF)	27.04%	72.96%
Demand and Seasonal Fluctuations (DSF)	78.21%	21.79%

Source: Author's Field Survey, 2024

Only 13.65% of respondents do not view it as a significant disruption factor as shown in Table 2.

Labor Shortages and Strikes (LSS) comprise truck driver shortages, labor strikes in terms of strikes by workers at warehouses or transportation companies can halt operations temporarily as well as inadequate **skilled labor shortages** which involve lack of skilled workers in warehousing or handling equipment can slow down processing and distribution.

Table 2 revealed that LSS have moderate acceptability at 60.63%. Although over half of respondents see labor disruptions as a concern, a considerable minority (39.37%) do not, suggesting either that labor disruptions are manageable or that they may not occur frequently enough to be a major logistical issue.

Technology and IT Failures (TIF) comprises of **system downtime** in terms of software or IT system failures which can adversely impact order processing, tracking, and communication; **cybersecurity attacks** in terms of cyber-attacks on logistics management systems can disrupt operations by compromising data or systems and **lack of real-time tracking which often make it** harder to manage and address potential disruptions quickly. The study further deduced that there is a relatively minor disruptions, with a low acceptability of 27.04% as indicated in Table 2. The high unacceptability (72.96%) suggests that most respondents do not see IT issues as a frequent or major disruption to logistics. This could imply that technology infrastructure is either well-managed or not heavily relied upon in this context.

Demand and Seasonal Fluctuations (DSF) is a situation of **seasonal peaks** during holidays or peak seasons where the volume of goods increases, straining logistics capacity; **sudden demand surges** involving situation like product launches or promotions which can lead to unexpected demand spikes, making it difficult for logistics to keep up and **supply chain bullwhip effect** such as small demand shifts can create larger fluctuations up the supply chain, disrupting logistics and inventory flow. The Table 2 revealed that DSF is largely accepted as a key logistical disruption, with 78.21% acceptability.

The high percentage of "Strongly Agree" (55.38%) indicates that seasonal and demand-related factors are seen as important drivers of logistics challenges, likely because they directly impact inventory levels and delivery schedules.

CONCLUSION AND RECOMMENDATIONS

The study concluded among other things that the key logistics risks affecting product distribution in Ifo Local Government are **Theft and Pilferage**, **Security Breaches**, labor inexperience and inadequacy and **other situation such as** weather events, geopolitical events, and corporate governance issues because they are all significantly differ as logistics risks.

The study however recommended that effective demand forecasting, resilient supply chain strategies, real-time visibility, and contingency planning among other things will go a long way in addressing the logistics-induced distribution disruptions issues which hence will allow and help organizations manage logistics disruptions and enhance their overall distribution reliability.

More importantly, developing multiple sourcing and distribution channels by relying on multiple suppliers and routes can minimize disruption risks, making it easier to adapt to unexpected obstacles in the supply chain as well as establish local supply option**s** for regions vulnerable to international trade risks, supporting local suppliers can ensure a reliable supply of goods, contributing to both product availability and local economic growth are equally recommended.

Implementation of advanced technology solutions by encouraging the adoption of digital logistics tools, such as real-time tracking and inventory management software, to help businesses monitor shipments, predict delays, and adjust inventory levels more accurately and predictive analytics can help anticipate potential logistics risks, like demand surges or weather disruptions, allowing companies to prepare better and reduce risk.

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