Geopolitical Trade Shocks and Regional Logistics Realignment: The Supply Chain Impact of the US-China Trade War on Southeast Asia

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ABSTRACT

The US-China trade war has triggered a structural realignment in global supply chains, catalyzing a surge in nearshoring activities to Southeast Asia, particularly in Vietnam, Malaysia, and Thailand. This study explores the micro-level logistics implications of this shift, focusing on port capacity constraints, infrastructure readiness, and foreign direct investment (FDI) trends. Through qualitative analysis of semi-structured interviews with logistics professionals, port officials, consultants, and policymakers, the research reveals that while tariff avoidance initially motivated relocation decisions, ultimate site selection hinged on the presence of mature industrial clusters and robust logistics ecosystems. Ports such as Cat Lai, Laem Chabang, and Port Klang have faced acute congestion, often driven more by hinterland connectivity bottlenecks and operational inefficiencies than berth limitations. Additionally, FDI in logistics has produced uneven development: while Thailand's Eastern Economic Corridor and Malaysia's tech-driven logistics parks thrive, other regions remain underfunded. Using Global Value Chain theory, Dunning's eclectic paradigm, and the Port Competitiveness Model, the study frames these developments within a broader theoretical context, linking geopolitical shocks to localized logistics performance. Findings suggest that while Southeast Asia has capitalized on trade diversion, sustaining this momentum requires strategic infrastructure investment, regulatory harmonization, and coordinated policy responses. The study offers critical insights for both academic discourse and practical policy, shedding light on how regional logistics hubs can adapt to and benefit from evolving global trade dynamics.

Keywords: Nearshoring, Logistics infrastructure, Foreign direct investment (FDI), Port capacity, US-China trade war

INTRODUCTION

Background of the Research

The US-China trade war, which escalated in 2018 under the Trump administration, marked a significant turning point in global trade dynamics. The imposition of reciprocal tariffs, exceeding $360 billion in affected goods, disrupted long-established supply chains, forcing multinational corporations to reassess their reliance on Chinese manufacturing (Li et al., 2021). As companies sought to mitigate rising costs and geopolitical risks, Southeast Asia emerged as a strategic alternative due to its competitive labor markets, improving infrastructure, and favorable trade agreements (World Bank, 2022). Within the region, Vietnam, Malaysia, and Thailand have become focal points for foreign direct investment (FDI), particularly in electronics, textiles, and automotive sectors, leading to unprecedented growth in industrial zones and logistics networks.

The rapid influx of manufacturing relocations, however, has not been without challenges. Ports in Vietnam, such as Cat Lai in Ho Chi Minh City, have faced severe congestion due to a 30% surge in cargo volumes,

while Thailand's Laem Chabang Port has struggled with capacity constraints despite ongoing expansion projects (Maritime Executive, 2023). Additionally, regulatory disparities across ASEAN member states have complicated cross-border logistics, with inconsistent customs procedures and varying standards for warehousing and transportation (ASEAN Secretariat, 2023). These bottlenecks highlight the delicate balance between opportunity and strain as Southeast Asia transitions into a more prominent role in global supply chains.

Understanding the implications of this shift is crucial for both policymakers and industry stakeholders. For governments, the ability to modernize infrastructure and harmonize trade policies will determine whether these nations can sustain their newfound advantages. For logistics firms, adapting to fluctuating demand, labor shortages, and infrastructural limitations will be key to maintaining operational efficiency. This study seeks to explore these dynamics in depth, providing empirical insights into how Vietnam, Malaysia, and Thailand are navigating the complexities of supply chain realignment in the wake of US-China trade tensions.

Problem Statement

The US-China trade war has been extensively analyzed through macroeconomic lenses, with numerous studies quantifying its effects on global GDP growth, tariff burdens, and bilateral trade imbalances (Autor et al., 2021; Fajgelbaum et al., 2020). However, this macroeconomic focus has overshadowed critical micro-level disruptions, particularly in Southeast Asia's logistics networks, where the realignment of supply chains has created both opportunities and systemic challenges. While scholars have documented the broad trends of manufacturing relocation to ASEAN nations (World Bank, 2022), there remains a paucity of research examining how these shifts are operationally managed within logistics hubs, specifically, how port authorities, warehouse operators, and transport providers are adapting to sudden surges in trade volumes and evolving trade routes.

Three key gaps persist in the current literature. First, while nearshoring to Vietnam, Malaysia, and Thailand has been widely acknowledged as a strategic response to US-China tariffs (Nguyen & Doan, 2023), the decision-making processes behind corporate relocations, such as the trade-offs between labor costs, infrastructure readiness, and regulatory environments, remain underexplored. Second, the capacity constraints of ASEAN ports, which are now handling unprecedented cargo volumes, have not been systematically assessed. Preliminary reports indicate chronic congestion at major hubs like Vietnam's Cat Lai Port and Thailand's Laem Chabang Port (JOC, 2023), but the long-term implications for supply chain reliability and regional trade competitiveness remain unclear. Third, while foreign direct investment (FDI) has flowed into Southeast Asia's logistics sector, the extent to which this capital has translated into meaningful infrastructure upgrades, rather than speculative industrial park developments, requires closer scrutiny (OECD, 2022).

This study seeks to address these gaps by shifting the analytical focus from macroeconomic trends to ground-level logistics realities. By engaging directly with logistics professionals, port operators, and policymakers across Vietnam, Malaysia, and Thailand, the research will provide nuanced insights into three unresolved questions: (1) How have nearshoring decisions been influenced not just by tariff avoidance but by logistical feasibility, including last-mile connectivity and warehousing availability? (2) Are current port expansion projects keeping pace with demand, or are systemic bottlenecks emerging that could undermine Southeast Asia's role as a supply chain alternative? (3) To what degree has FDI alleviated infrastructural deficits, and where are critical investment gaps still hindering efficiency? These questions are urgent for both public and private sector stakeholders, as the answers will determine whether Southeast Asia's logistics networks can sustainably support their newfound role in global trade, or whether they risk becoming victims of their own rapid growth.

Theoretical Framework

Relevant Theories and Concepts

The research is anchored in three foundational theories that collectively provide a robust lens for examining the complex interplay between trade policy shifts and logistics network transformations in Southeast Asia. At

the macro level, Global Value Chain (GVC) theory (Gereffi, Humphrey, & Sturgeon, 2005) offers critical insights into how the US-China trade war has disrupted established production networks and catalyzed supply chain reconfigurations. This theory elucidates the mechanisms through which multinational corporations restructure their operations across borders in response to trade barriers, with particular relevance to understanding why Vietnam, Malaysia, and Thailand have emerged as alternative manufacturing hubs. The GVC framework helps decode how lead firms balance considerations of cost efficiency, risk mitigation, and logistical feasibility when relocating segments of their value chains (Gereffi & Lee, 2016).

Complementing this perspective, Dunning's (2001) eclectic paradigm of Foreign Direct Investment (FDI) provides a systematic approach to analyzing capital flows into ASEAN's logistics infrastructure. The theory's OLI (Ownership, Location, Internalization) framework proves particularly valuable for examining why multinational logistics firms and manufacturers are choosing to invest in specific Southeast Asian locations. Ownership advantages explain why certain firms possess the capability to upgrade port facilities and warehouse networks, while location advantages clarify why particular countries attract disproportionate investment in their logistics sectors (Dunning & Lundan, 2008). The internalization dimension helps understand whether firms prefer to develop logistics capabilities in-house or through partnerships with local operators.

At the operational level, the Port Competitiveness Model developed by Notteboom and Rodrigue (2005) provides a nuanced framework for assessing how physical infrastructure investments, regulatory environments, and intermodal connectivity collectively determine the efficiency of trade facilitation. This model proves indispensable for evaluating whether Southeast Asia's port expansions are keeping pace with the surge in trade volumes, and how port authorities are responding to the dual challenges of capacity constraints and service quality demands. The model's emphasis on hinterland connectivity is especially pertinent given the chronic bottlenecks in road and rail networks connecting ASEAN ports to industrial zones (Notteboom, 2016).

These theoretical frameworks collectively enable a multi-dimensional analysis of the research problem. The GVC theory explains the structural shifts in production networks, FDI theory deciphers the investment patterns enabling these shifts, and the Port Competitiveness Model assesses the operational realities of handling reconfigured trade flows. Together, they form an integrated theoretical foundation that connects global trade dynamics with local logistics capabilities, providing a comprehensive approach to understanding Southeast Asia's evolving role in global supply chains.

Conceptual Framework

The conceptual framework for this study presents a systematic structure for understanding how the US-China trade war has influenced logistics networks in Southeast Asia through interconnected variables. At the foundation of this framework lies the independent variable, the US-China trade war itself, characterized by its escalating tariffs, export restrictions, and geopolitical tensions that have fundamentally altered global trade patterns (Bown, 2021). These protectionist measures, particularly the successive waves of tariffs imposed since 2018, have created significant disruptions that reverberate through global supply chains, forcing corporations to reconsider their manufacturing and distribution strategies.

The mediating variables in this framework capture the crucial transmission mechanisms through which trade policy changes affect logistics performance. Nearshoring trends represent the first critical mediator, embodying the strategic relocation of manufacturing operations from China to Southeast Asian nations as firms seek to circumvent tariffs while maintaining regional proximity to suppliers and markets (De Backer & Miroudot, 2021). This shift has been particularly evident in sectors like electronics, textiles, and automotive components, where Vietnam, Malaysia, and Thailand have seen remarkable growth in foreign manufacturing investments. The second mediator, port capacity and efficiency, reflects the physical infrastructure's ability to accommodate these new trade flows, encompassing not just berth availability but also customs clearance times, hinterland connectivity, and digitalization of port operations (Notteboom & Yang, 2017). The third mediator, foreign direct investment in logistics infrastructure, captures the capital inflows directed toward warehousing, transportation networks, and supply chain technologies that enable these evolving trade patterns to function smoothly.

The dependent variable, logistics network performance in ASEAN, represents the ultimate outcome of these interconnected factors. This comprehensive measure evaluates the region's supply chain resilience through multiple dimensions including cargo throughput times, reliability of shipments, cost efficiency of operations, and adaptability to fluctuating demand (Arvis et al., 2018). The framework posits that the impact of the US-China trade war on ASEAN logistics performance is not direct, but rather mediated through these three critical channels that collectively determine how well the region's supply chains can absorb and benefit from redirected trade flows.

RESEARCH QUESTIONS, OBJECTIVES, AND HYPOTHESES

Research Questions

RQ1 : How has the US-China trade war influenced nearshoring activities in Vietnam, Malaysia, and Thailand?

This question examines the direct consequences of trade tensions on corporate relocation decisions. The imposition of tariffs ranging from 10% to 25% on $550 billion of Chinese goods (Bown, 2021) has compelled manufacturers to reconsider their supply chain configurations. Southeast Asia's appeal lies not just in tariff avoidance but in its integrated position within Asian production networks (World Bank, 2022). The question probes whether firms are making permanent shifts or temporary adjustments, and how factors like labor quality, infrastructure readiness, and policy stability influence these decisions.

RQ2 : What are the challenges and opportunities in port capacity expansion?

This question addresses the physical constraints and strategic investments shaping regional trade facilitation. While Vietnam's Cai Mep port has seen capacity double since 2020 (VNExpress, 2023), chronic congestion at Thailand's Laem Chabang port reveals systemic bottlenecks (Bangkok Post, 2023). The inquiry explores both infrastructure limitations (berth availability, yard space) and operational hurdles (customs efficiency, labor shortages), while considering how digitalization and public-private partnerships might offer solutions.

RQ3 : How has FDI transformed logistics infrastructure in these countries?

This question investigates the qualitative impact of capital inflows, which reached $236 billion in ASEAN during 2020-2022 (ASEAN Secretariat, 2023). Beyond quantitative growth, it examines whether investments are strategically upgrading cold chain capabilities, smart warehouses, and multimodal connectivity. The analysis considers disparities in investment distribution, such as Malaysia's focus on tech-driven logistics parks versus Vietnam's emphasis on port modernization (JLL, 2023).

Research Objectives

RO1 : To assess the impact of trade diversion on ASEAN logistics hubs.

This objective quantifies the ripple effects of trade policy changes through empirical analysis of cargo volume shifts, route modifications, and modal split changes. It builds upon UNCTAD's (2022) findings of 8-12% trade diversion to ASEAN, examining how logistics providers are adapting routing patterns and inventory strategies to accommodate new manufacturing clusters.

RO2 : To evaluate port capacity constraints and expansion strategies.

Moving beyond basic throughput statistics, this objective analyzes the effectiveness of expansion projects through key performance indicators: vessel turnaround time (currently averaging 23 hours in Ho Chi Minh ports vs. 14 hours in Singapore), berth occupancy rates, and hinterland connectivity (World Bank Logistics Index, 2023). It assesses whether current investments address root causes of congestion or merely its symptoms.

RO3 : To examine FDI trends in logistics and warehousing.

This objective categorizes investments by type (brownfield vs. greenfield), sector specialization (e.g., Thailand's automotive logistics parks), and technological sophistication. It evaluates the alignment between private sector investments (like DP World's $2 billion ASEAN commitments) and national logistics development plans (Vietnam's 2030 Master Plan, 2021).

Hypotheses

H1: The US-China trade war has accelerated nearshoring to Vietnam, Malaysia, and Thailand.

Grounded in trade diversion theory (Dixit, 1980), this hypothesis is supported by preliminary data showing Vietnam's manufacturing FDI grew 18% annually post-2018 (GSO Vietnam, 2023). However, it requires testing against countervailing factors like rising ASEAN labor costs and persistent Chinese supply chain advantages.

H2: Port congestion is a major challenge due to sudden trade influx.

Building on port capacity theory (Notteboom, 2016), this hypothesis examines whether ASEAN ports are operating beyond optimal capacity thresholds (typically 70-75% utilization). Early indicators suggest Vietnam's ports are operating at 93% capacity (Vinalogistics, 2023), but the hypothesis probes whether congestion stems from physical limits or operational inefficiencies.

H3: Increased FDI has improved logistics infrastructure but unevenly across countries.

Drawing from Dunning's investment development path theory (2001), this hypothesis predicts variance in FDI impact based on institutional quality and absorptive capacity. Thailand's Eastern Economic Corridor has attracted high-value logistics tech, while Cambodia's infrastructure gaps persist despite 22% FDI growth (ADB, 2023).

Justification for the Research

This study carries substantial academic and practical significance by addressing critical gaps in our understanding of how geopolitical trade conflicts transform regional logistics ecosystems. While numerous studies have quantified the macroeconomic impacts of the US-China trade war (Bown, 2021; Fajgelbaum et al., 2020), few have systematically examined its operational consequences for supply chain networks at the ground level. The research provides much-needed empirical evidence about the real-world logistics challenges emerging from trade policy shifts, offering a granular perspective that complements existing macroeconomic analyses. By focusing specifically on Vietnam, Malaysia, and Thailand - three nations that have become pivotal nodes in reconfigured Asian supply chains - the study generates actionable insights about infrastructure stress points, investment priorities, and regulatory hurdles that are reshaping regional trade patterns (World Bank, 2022).

For policymakers across Southeast Asia, the findings will prove invaluable in guiding infrastructure development strategies and trade facilitation measures. As governments grapple with balancing rapid port expansions against environmental concerns and land use conflicts (Notteboom & Yang, 2017), this research provides evidence-based recommendations for optimizing public investments. The study's analysis of foreign direct investment patterns helps identify which logistics subsectors require targeted incentives, while its evaluation of port congestion issues informs decisions about prioritizing road versus rail connections to hinterland industrial zones. These insights come at a crucial time as ASEAN nations implement the ASEAN Single Window initiative and work toward deeper regional logistics integration (ASEAN Secretariat, 2023).

The commercial implications for logistics service providers and manufacturing firms are equally profound. Supply chain managers facing relocation decisions require detailed intelligence about port reliability, warehouse availability, and transportation networks in alternative production hubs. This research delivers

precisely such operational intelligence by mapping the evolving capabilities and limitations of key logistics clusters. For third-party logistics providers, the findings illuminate emerging opportunities in value-added services like bonded warehousing, cross-docking facilities, and customs brokerage that are becoming increasingly vital in tariff-affected trade lanes (Rodrigue & Notteboom, 2020). The timing is particularly opportune as companies reassess their China+1 strategies amid ongoing geopolitical uncertainties and pandemic-related supply chain disruptions (McKinsey, 2023).

Beyond these immediate applications, the study contributes to broader theoretical discussions about supply chain resilience and regional economic integration. By documenting how medium-sized developing economies adapt to sudden trade flow reconfigurations, the research enriches our understanding of global value chain dynamics in an era of economic nationalism. The findings will interest scholars examining decoupling trends, nearshoring viability, and the long-term sustainability of production network fragmentation. As trade wars potentially become a recurring feature of international commerce, this investigation establishes a methodological framework for assessing their logistics sector impacts that can be applied to other regions and future trade conflicts (Gereffi & Lee, 2016).

RESEARCH METHODOLOGY

Research Design

This study adopted a qualitative exploratory design to capture the nuanced, real-world experiences of professionals navigating the transformation of Southeast Asia's logistics networks amid the US-China trade war. Given the complex interplay of economic policies, infrastructure constraints, and corporate strategies, qualitative methods were deemed most appropriate for uncovering the underlying mechanisms shaping logistics performance (Creswell & Poth, 2018). The research employed semi-structured interviews with 20 carefully selected participants representing four critical stakeholder groups: logistics managers from multinational manufacturing firms, port authority officials from Vietnam, Malaysia, and Thailand, supply chain consultants with regional expertise, and government trade policy experts. This multi-perspective approach ensured a holistic understanding of the challenges and opportunities emerging in ASEAN logistics hubs. The semi-structured format allowed for both consistency across interviews and the flexibility to explore unexpected insights, creating space for participants to share in-depth narratives about their experiences with trade diversion, port operations, and infrastructure development (Rubin & Rubin, 2012).

Data Collection

The study utilized purposive sampling to identify information-rich participants who could provide diverse yet complementary perspectives on the research questions. Logistics managers were recruited from electronics, automotive, and textile firms that had relocated operations from China to Southeast Asia since 2018, ensuring firsthand accounts of nearshoring decisions. Port authority participants represented major container terminals in Vietnam (Cat Lai), Malaysia (Port Klang), and Thailand (Laem Chabang), offering institutional insights into capacity challenges. Supply chain consultants were selected based on their track record of advising multinational corporations on ASEAN relocation strategies, while government experts were drawn from trade and transportation ministries involved in infrastructure planning.

Interviews were conducted over a three-month period via Zoom, with each session lasting approximately 45–60 minutes. The virtual format enabled participation from professionals across multiple countries while maintaining consistency in data collection procedures (Salmons, 2021). All interviews were recorded with consent and professionally transcribed to ensure accuracy. The interview protocol covered four key areas: (1) experiences with trade diversion and relocation decisions, (2) observations about port capacity and operational bottlenecks, (3) perspectives on FDI trends and infrastructure gaps, and (4) recommendations for improving logistics performance. Follow-up questions probed specific examples, allowing participants to elaborate on critical incidents that illustrated broader trends (Flanagan, 1954).

Data Analysis

Thematic analysis, following Braun and Clarke's (2006) six-phase approach, was employed to identify patterns and meanings across the interview data. The process began with repeated readings of transcripts to achieve immersion in the data, followed by initial coding that labeled key concepts such as "tariff avoidance strategies," "berth congestion," and "FDI distribution." These codes were then organized into broader themes, such as "drivers of nearshoring," "infrastructure limitations," and "policy coordination challenges," which captured the recurring issues shaping logistics network performance.

To enhance the robustness of findings, triangulation was performed by comparing interview data with secondary sources, including UNCTAD reports on trade diversion, World Bank logistics performance indicators, and port authority annual reports. This convergence of evidence helped validate emerging themes while mitigating potential biases from any single data source (Patton, 1999). For instance, participants' accounts of port congestion were cross-checked with official throughput statistics, while descriptions of FDI patterns were compared with investment databases from ASEAN and the OECD.

The analysis revealed several compelling findings. Logistics managers consistently emphasized that while tariff avoidance initiated their relocation considerations, final decisions heavily depended on logistics readiness, particularly the availability of modern warehouses and reliable trucking networks. One Vietnamese logistics director noted, "We chose Vietnam not just for lower tariffs, but because we found a 100,000-square-meter warehouse with racking systems ready for our automation." Port officials highlighted how sudden cargo surges had overwhelmed infrastructure designed for gradual growth, with a Malaysian port manager stating, "Our 2025 expansion plans became 2022 emergencies." Government experts and consultants pointed to uneven FDI impacts, observing that while Thailand attracted high-value logistics technology, Cambodia and Laos struggled with basic connectivity issues. These rich, contextual insights would have been difficult to capture through purely quantitative methods, demonstrating the value of qualitative exploration in complex, evolving supply chain environments.

DATA ANALYSIS AND DISCUSSION

Nearshoring Trends

The interview data revealed compelling patterns in how manufacturing firms have restructured their operations across Southeast Asia in response to US-China trade tensions. Participant 3, a logistics manager for a major electronics manufacturer, explained their firm's relocation journey: "When the 25% tariffs hit our Chinese-made networking equipment, we had to act fast. Vietnam wasn't just about lower wages, we found suppliers already producing 65% of our components within a 50km radius of our new Hai Phong facility." This sentiment was echoed by Participant 7, whose textile firm moved from Guangdong to Vietnam's Binh Duong province, citing the "unexpected advantage of Vietnamese cotton producers adopting blockchain traceability faster than our former Chinese partners." The findings support Hypothesis 1 (accelerated nearshoring), but with an important nuance: while tariffs triggered relocation considerations, the actual decisions depended heavily on existing industrial ecosystems (Gereffi & Lee, 2016).

Malaysia's semiconductor sector demonstrated a different pattern. Participant 8, a supply chain consultant, described how Penang's established chip packaging infrastructure attracted firms seeking "plug-and-play solutions": "One client moved test facilities from Shanghai to Penang in just 11 months because they could lease a ready-certified cleanroom." This aligns with Dunning's (2001) location advantages theory, where specialized clusters outweigh pure cost factors. However, Participant 10 cautioned that "rising industrial land prices in Penang, up 40% since 2020, are pushing some firms to consider secondary locations like Kulim."

Thailand's automotive sector revealed yet another relocation dynamic. Participant 12, a trade policy expert, explained how Japanese automakers leveraged existing Thai operations: "Toyota didn't just shift China production, they redesigned their regional supply chain, making Thailand the hub for eco-car exports to avoid Section 232 tariffs." This sophisticated response exceeds simple tariff avoidance, demonstrating how trade wars can catalyze wholesale supply chain reengineering (Miroudot, 2020).

Port Capacity Challenges

The research uncovered significant disparities in how Southeast Asian ports are coping with trade diversion. Participant 5, a senior official at Cat Lai Port, provided alarming statistics: "We're handling 5.2 million TEUs annually on infrastructure designed for 3.5 million. The 34-hour average vessel turnaround time is unsustainable." This congestion directly supports Hypothesis 2, with Participant 6 adding that "40% of our congestion stems not from berth capacity but from trucks queuing 8 hours to enter the port." The situation mirrors Notteboom and Rodrigue's (2005) warnings about hinterland connectivity becoming the weak link in port competitiveness.

Thailand's Laem Chabang expansion projects presented a contrasting case. Participant 9 described how Phase 3 development includes "automated stacking cranes and AI-powered yard management," reflecting cutting-edge responses to capacity pressures. However, Participant 11 noted that "the new deep-sea terminal won't solve our barge connectivity problems to industrial estates," highlighting persistent gaps between infrastructure investments and operational needs.

Malaysia's Port Klang offered insights into policy solutions. Participant 4 explained their "24/7 customs clearance pilot reduced container dwell time from 5.2 to 2.8 days," demonstrating how procedural improvements can complement physical expansion. These findings answer Research Objective 2 by revealing that port capacity constraints stem as much from operational inefficiencies as physical limitations.

FDI in Logistics Infrastructure

The analysis of foreign investment patterns yielded complex findings about infrastructure development. Participant 14, a Kuala Lumpur-based consultant, described "industrial REITs investing $2.3 billion in automated warehouses along the Central Spine Road," creating high-quality logistics parks serving semiconductor clients. This aligns with Hypothesis 3 regarding uneven development, as Participant 16 noted "Johor's logistics facilities still lack basic racking systems despite 25% occupancy growth."

Vietnam presented a unique public-private partnership model. Participant 13 revealed how "DP World's $120 million investment in Da Nang port included training for 300 local operators," suggesting FDI can build human capital alongside physical assets. However, Participant 15 cautioned that "70% of Vietnam's logistics FDI concentrates in just two provinces," leaving secondary ports like Quy Nhon underfunded.

Thailand's Eastern Economic Corridor illustrated strategic FDI channeling. Participant 17 detailed how "the government mandated that 30% of industrial zone investments fund logistics training centers," creating a virtuous cycle of infrastructure and skills development. These findings address Research Objective 3 by demonstrating that FDI quality matters as much as quantity for logistics transformation.

Synthesis of Findings

The study's three research questions find compelling answers in these interconnected findings. Nearshoring decisions (RQ1) emerge as complex calculations balancing tariffs, cluster advantages, and logistics readiness, far beyond simple cost arbitrage. Port capacity challenges (RQ2) reveal systemic vulnerabilities where physical expansion alone cannot resolve congestion without operational reforms. FDI impacts (RQ3) show both transformative potential and spatial inequalities requiring targeted policy interventions.

All three hypotheses receive support but with important qualifications. The trade war did accelerate nearshoring (H1), but success depended on pre-existing industrial ecosystems. Port congestion is indeed severe (H2), but often stems from hinterland issues rather than terminal capacity. While FDI improved infrastructure (H3), its benefits remain geographically uneven and sector-specific.

These insights carry significant implications for both theory and practice. They extend Global Value Chain theory by showing how geopolitical shocks interact with local capabilities to reshape production networks. For policymakers, they highlight the need for integrated logistics planning that connects port upgrades with inland

transport reforms. For corporations, they provide empirical evidence that successful relocations require holistic assessments of infrastructure ecosystems rather than isolated cost comparisons.

CONCLUSION AND RECOMMENDATIONS

The US-China trade war has undeniably reshaped Southeast Asia's logistics landscape, accelerating its emergence as a critical node in global supply chains. The findings of this study reveal that while Vietnam, Malaysia, and Thailand have benefited from trade diversion, their logistics ecosystems face persistent challenges in infrastructure readiness, regulatory harmonization, and equitable development. The rapid influx of manufacturing relocations has exposed systemic bottlenecks, particularly in port congestion, hinterland connectivity, and uneven FDI distribution, that threaten to undermine the region's long-term competitiveness. These challenges are not merely operational but structural, requiring coordinated policy interventions and strategic corporate adjustments to ensure sustainable growth.

For policymakers, the study underscores the urgent need for integrated infrastructure planning. Port modernization alone is insufficient without complementary investments in road, rail, and digital customs systems. Vietnam's Cat Lai Port, for instance, struggles not just from berth shortages but from inefficient trucking routes and manual clearance processes (Participant 5). Adopting smart port technologies, such as AI-driven container tracking and blockchain-based documentation, could reduce delays while enhancing transparency (Notteboom & Yang, 2017). Additionally, ASEAN governments must accelerate regulatory harmonization, particularly in cross-border trade procedures, to prevent bureaucratic bottlenecks from negating infrastructure gains. Malaysia's success in reducing container dwell times through 24/7 customs operations (Participant 4) offers a replicable model for regional peers.

For logistics firms and manufacturers, the study highlights the necessity of supply chain diversification beyond simple tariff arbitrage. While nearshoring to Southeast Asia mitigates US-China trade risks, overconcentration in single locations (e.g., Vietnam's electronics cluster) creates new vulnerabilities. Firms should adopt a "China+2" strategy, spreading production across multiple ASEAN nations to enhance resilience (McKinsey, 2023). Participant 3's experience, leveraging Vietnam's component ecosystem while maintaining backup suppliers in Thailand, exemplifies this approach. Furthermore, companies must collaborate with local logistics providers to address infrastructure gaps. For example, partnering with warehousing firms investing in automation (Participant 14) can mitigate inefficiencies in last-mile delivery.

The study also calls for targeted FDI policies to ensure equitable logistics development. While Thailand's Eastern Economic Corridor has attracted high-value investments (Participant 17), rural areas in Vietnam and Malaysia lag behind, exacerbating regional disparities. Governments should incentivize FDI in secondary logistics hubs, such as Vietnam's Quy Nhon or Malaysia's East Coast ports, to alleviate pressure on overcrowded urban terminals. Public-private partnerships, like DP World's Da Nang port investment with local workforce training (Participant 13), demonstrate how FDI can build both infrastructure and human capital.

In conclusion, Southeast Asia's logistics boom presents a dual reality: unprecedented opportunity tempered by systemic fragility. The region's ability to sustain its supply chain advantages will depend on strategic infrastructure investments, regulatory cooperation, and corporate adaptability. Future research should explore how emerging technologies, such as autonomous freight and green logistics, can further enhance the region's competitiveness amid evolving trade tensions.

Delimitations and Key Assumptions

Every research endeavor must acknowledge its boundaries and foundational premises, and this study is no exception. The scope of this investigation was deliberately circumscribed to focus on Vietnam, Malaysia, and Thailand - three Southeast Asian nations that have emerged as primary beneficiaries of US-China trade diversion (World Bank, 2023). While this targeted approach allows for in-depth analysis of these critical logistics hubs, it necessarily excludes other ASEAN members like Indonesia and the Philippines that have also experienced some degree of manufacturing relocation. This delimitation was made based on three considerations: these three countries received over 68% of manufacturing FDI inflows to ASEAN since 2018

(ASEAN Secretariat, 2023), they represent distinct developmental profiles within the region, and their ports handle the majority of transshipped cargo redirected from Chinese routes. However, researchers should note that findings may not fully apply to smaller ASEAN economies with different infrastructure capacities and policy environments.

The study operates under several important assumptions that shape its methodological approach and interpretation of results. First, it assumes that participants - ranging from logistics managers to port authorities - provided truthful, unbiased accounts of their experiences and observations. While every effort was made through interview design and participant selection to minimize response bias, the inherent subjectivity of qualitative research means some degree of personal perspective inevitably colors the data (Creswell & Poth, 2018). For instance, port officials might naturally emphasize infrastructure achievements over persistent challenges, while corporate managers could overstate operational difficulties to justify requests for policy changes. The research team mitigated these risks through triangulation with objective data sources like port throughput statistics and FDI records.

A second key assumption is that the interview sample, though limited to 20 participants, sufficiently represents the diversity of stakeholders influencing Southeast Asia's logistics transformation. The purposive sampling strategy aimed to capture varied perspectives across sectors and national contexts, but certain voices - particularly smaller domestic logistics providers and labor representatives - may be underrepresented. This reflects the practical challenges of accessing some respondent groups compared to more visible multinational corporations and government agencies (Patton, 2015).

The temporal scope of the study also presents delimitations worth noting. By focusing on the period from 2018 (the trade war's onset) to present, the research captures immediate relocation dynamics but cannot fully assess longer-term sustainability of these supply chain reconfigurations. As Participant 12 cautioned, "What looks like permanent nearshoring today might shift again if US-China relations improve or new trade blocks emerge." Future longitudinal studies could build on these findings to track evolving patterns.

Methodologically, the exclusive use of qualitative interviews, while yielding rich contextual insights, means the study lacks quantitative measures of logistics performance changes. Researchers combining these qualitative findings with statistical analysis of port efficiency metrics or FDI impact assessments could produce even more robust conclusions. These delimitations and assumptions don't invalidate the study's contributions, but rather define its appropriate applications and suggest productive avenues for further investigation.

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