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Causal Factors Influencing Logistics Performance in Tourism Businesses: A Supply Chain Collaboration Perspective

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Abstract

This study investigates the causal relationships among factors influencing logistics performance in tourism businesses, with a particular emphasis on supply chain collaboration, organizational trust, and commitment. A mixed-methods approach was employed, integrating quantitative data from 400 tourism entrepreneurs in China, collected via stratified random sampling, with qualitative insights from 15 purposively selected industry experts through in-depth interviews. Structural equation modeling (SEM) analysis revealed that supply chain collaboration, trust, and commitment exert significant direct effects on logistics performance, with the model demonstrating robust empirical fit ($\chi^2 = 25.86$, df = 20, p = 0.17, GFI = 0.99, AGFI = 0.97, RMR = 0.0098). Qualitative findings highlighted the critical role of integrated collaboration among stakeholders, including local governments and suppliers, in enhancing service efficiency and responsiveness. The study proposes a comprehensive causal model that integrates these factors, offering actionable implications for tourism businesses to optimize logistics operations and for policymakers to foster sustainable tourism ecosystems. The model underscores the importance of trust-building and commitment as mediators in collaborative frameworks, providing a blueprint for improving operational efficiency in dynamic market environments.

Keywords: Supply Chain Collaboration, Logistics Performance, Organizational Trust, Organizational Commitment, Tourism Business, Sustainable Tourism

Introduction

The global tourism industry is a cornerstone of economic development, contributing significantly to GDP and employment in many countries, including China, where tourism accounts for over 11% of GDP (World Travel & Tourism Council, 2024). However, the logistics operations underpinning tourism face multifaceted challenges, including inefficiencies in transportation, fragmented information systems, and inconsistent service delivery. Effective

logistics performance, which encompasses physical flows (e.g., transportation of goods and passengers), information flows (e.g., real-time booking and communication systems), and financial flows (e.g., seamless payment processing), is essential for delivering high-quality, seamless tourist experiences (Zhang et al., 2009). In the context of tourism, logistics performance directly impacts customer satisfaction, operational costs, and competitive positioning in a rapidly evolving market.

Supply chain collaboration, defined as the coordinated effort among stakeholders—such as tour operators, hotels, transportation providers, and local governments—to manage resources and mitigate risks, has emerged as a pivotal determinant of logistics success (Matopoulos et al., 2007). Collaboration enables stakeholders to align objectives, share critical information, and streamline operations, thereby enhancing service delivery. However, the effectiveness of collaboration is contingent upon organizational trust, which fosters cooperation, and commitment, which ensures sustained engagement among partners (Cao & Zhang, 2011). Despite their importance, the interplay of these factors in shaping logistics outcomes in tourism remains underexplored, particularly in the context of China's dynamic and rapidly growing tourism sector.

This study addresses three research questions: (1) What are the primary causal factors influencing logistics performance in tourism businesses? (2) How do supply chain collaboration, organizational trust, and commitment directly and indirectly impact logistics outcomes? (3) How can a causal model integrating these factors enhance logistics efficiency and sustainability? Grounded in the resource-based view (RBV) theory (Barney, 1991), which posits that intangible resources like collaboration and trust drive competitive advantage, and supply chain management principles, this research examines the roles of these factors in optimizing logistics performance. By employing a mixed-methods approach, the study integrates quantitative data from 400 tourism entrepreneurs across China with qualitative insights from 15 industry experts, providing a comprehensive framework for understanding and improving logistics dynamics in tourism.

The significance of this study lies in its potential to inform both practice and policy. For tourism businesses, the findings offer strategies to enhance operational efficiency through collaborative networks. For policymakers, the study provides insights into fostering sustainable tourism ecosystems through incentives for collaboration and technology adoption. The subsequent sections review relevant literature, detail the methodology, present findings, and discuss implications.

Literature Review

Logistics in tourism involves the seamless integration of physical, informational, and financial flows to deliver high-quality services that meet tourist expectations (Muhcina & Popovici, 2008). Physical flows include the transportation of tourists and supplies, informational flows encompass booking systems and communication platforms, and financial flows involve payment processing and revenue management. Key performance metrics include customer acquisition rates, service delivery speed, cost efficiency, and customer satisfaction (Yilmaz & Bititci, 2006). Effective logistics enhances competitiveness by reducing operational delays, minimizing costs, and ensuring consistent service quality (Salmi, 2023). For example, real-time

tracking of tourist transportation and automated booking systems have been shown to improve customer experiences in destinations like Beijing and Shanghai (Sarfraz et al., 2023).

Recent studies highlight the growing complexity of tourism logistics due to increasing tourist volumes, diverse consumer preferences, and environmental sustainability demands (Budeanu et al., 2016). These challenges necessitate innovative approaches to logistics management, particularly in emerging markets like China, where rapid urbanization and digitalization are transforming the tourism landscape.

Supply chain collaboration refers to the strategic alignment of stakeholders to achieve shared objectives through resource sharing, risk management, and coordinated decision-making (Barratt, 2016). In tourism, collaboration involves partnerships among tour operators, hospitality providers, transportation agencies, and local governments to deliver integrated services (Min et al., 2005). Collaborative practices, such as joint marketing campaigns, shared logistics platforms, and co-created tourist packages, enhance efficiency by reducing redundancies and improving information flow (Fawcett et al., 2008). For instance, collaborative logistics platforms in Thailand have reduced transportation costs by 15% for small tourism businesses (Wu et al, 2017).

Collaboration is particularly critical in tourism due to the industry's fragmented nature, where multiple stakeholders operate interdependently. Effective collaboration requires clear communication channels, aligned incentives, and mutual accountability, all of which contribute to logistics performance (Mentzer et al., 2001). However, barriers such as mistrust and misaligned goals can hinder collaboration, underscoring the need for trust and commitment as enabling factors.

Organizational trust, defined as confidence in the reliability and integrity of partners, is a foundational element of successful collaboration (Whitener et al., 1998). Trust reduces transaction costs, mitigates risks, and fosters open communication, enabling stakeholders to share sensitive information, such as demand forecasts or operational constraints (Dyer & Chu, 2003). In tourism, trust is critical for partnerships between small businesses and larger operators, where power imbalances may exist.

Commitment, characterized by employees' and organizations' dedication to shared goals, drives service quality and operational consistency (Allen & Meyer, 1990). Committed stakeholders are more likely to invest in long-term relationships, adopt innovative practices, and prioritize customer satisfaction (Morgan & Hunt, 1994). Both trust and commitment mediate the relationship between collaboration and logistics performance, as they ensure sustained engagement and alignment in collaborative efforts (Matopoulos et al., 2007). Recent research suggests that trust and commitment are particularly vital in high-uncertainty environments, such as tourism markets recovering from global disruptions like pandemics (Mittal & Sinha, 2022).

This study adopts the RBV theory, which emphasizes the role of intangible resources, such as collaboration, trust, and commitment, in achieving competitive advantage (Barney, 1991). Additionally, supply chain integration theory (Frohlich & Westbrook, 2001) provides a lens for understanding how collaborative practices enhance logistics outcomes. These theories

collectively inform the hypothesized causal model, which posits that collaboration directly influences logistics performance and indirectly through trust and commitment.

Methodology

A mixed-methods approach was employed to provide a holistic understanding of logistics performance in tourism. The quantitative phase used structural equation modeling (SEM) to test causal relationships among supply chain collaboration, trust, commitment, and logistics performance. The qualitative phase involved in-depth interviews to explore contextual factors and validate quantitative findings, ensuring triangulation of data sources.

The population consisted of 5,112 registered tourism businesses in China, including tour operators, travel agencies, and hospitality providers. A stratified random sampling method was used to select 400 respondents, with strata defined by geographic regions (e.g., Beijing, Shanghai, Guangdong, Sichuan) and business size (small, medium, large). This approach ensured representativeness across diverse market contexts. For the qualitative phase, 15 industry experts, including CEOs, logistics managers, and tour operators, were purposively selected based on their experience and influence in the sector. Interviews were conducted face-to-face to capture nuanced insights.

Quantitative data were collected using a structured questionnaire comprising four constructs: supply chain collaboration (6 items, e.g., “We share resources with partners”), organizational trust (3 items, e.g., “We trust our partners’ reliability”), commitment (3 items, e.g., “Our team is dedicated to partnership goals”), and logistics performance (3 items, e.g., “Our logistics operations meet customer expectations”). Items were adapted from validated scales (Matopoulos et al., 2007; Allen & Meyer, 1990) and measured on a 5-point Likert scale. The questionnaire was pre-tested with 30 respondents to ensure clarity and reliability (Cronbach’s alpha > 0.80 for all constructs).

Qualitative data were gathered through semi-structured interviews, with questions focusing on collaboration practices, logistics challenges, and the roles of trust and commitment. Interviews, averaging 45 minutes, were audio-recorded with consent and transcribed verbatim for analysis.

Quantitative analysis was conducted using AMOS software to perform SEM. The model’s goodness-of-fit was assessed using chi-square (χ^2), goodness-of-fit index (GFI), adjusted GFI (AGFI), and root mean square residual (RMR). Path coefficients (β) and p-values were used to evaluate the significance of causal relationships. Qualitative data were analyzed thematically using NVivo, with coding focused on identifying patterns related to collaboration, trust, commitment, and logistics efficiency. Triangulation was achieved by cross-referencing quantitative results with qualitative themes.

Results

The SEM analysis confirmed significant direct effects of supply chain collaboration ($\beta = 0.42$, $p < 0.01$), organizational trust ($\beta = 0.31$, $p < 0.01$), and commitment ($\beta = 0.28$, $p < 0.01$) on logistics performance. The model demonstrated excellent fit ($\chi^2 = 25.86$, $df = 20$, $p = 0.17$, GFI = 0.99, AGFI = 0.97, RMR = 0.0098), indicating that the hypothesized relationships are

empirically supported. Indirect effects were also observed, with collaboration influencing logistics performance through trust (β = 0.15, p < 0.05) and commitment (β = 0.12, p < 0.05).

The correlation matrix of observed variables is presented below:

Variable	Collaboration	Trust	Commitment	Logistics Performance
Collaboration	1.00	0.62**	0.58**	0.60**
Trust	0.62**	1.00	0.55**	0.65**
Commitment	0.58**	0.55**	1.00	0.57**
Logistics Performance	0.65**	0.06**	0.57**	1.00

** p < 0.01

To further explore the model's robustness, a multi-group analysis was conducted across business sizes (small vs. large). Results indicated that the effect of collaboration on logistics performance was stronger for small businesses (β = 0.48, p < 0.01) than for large businesses (β = 0.36, p < 0.01), suggesting that smaller firms benefit more from collaborative networks due to resource constraints.

Qualitative findings enriched the quantitative results by providing contextual depth. Interviewees consistently emphasized the importance of integrated collaboration across the tourism supply chain. One tour operator stated, "Working closely with local governments and suppliers reduces delays and improves tourist satisfaction. For example, coordinated transportation schedules in Shanghai have cut wait times by 20%." Another expert highlighted the role of technology, noting, "Real-time booking systems and shared logistics platforms are game-changers for small operators, enabling us to compete with larger firms."

Themes related to trust included the need for transparent communication and reliable partnerships. A logistics manager remarked, "Trust is built when suppliers deliver on promises, like ensuring timely hotel check-ins during peak seasons." Commitment was linked to long-term investments in relationships, with one CEO noting, "Our team's dedication to collaborative goals, like joint sustainability initiatives, has strengthened our partnerships." These insights underscore the mediating roles of trust and commitment in enhancing logistics outcomes.

The proposed causal model integrates supply chain collaboration, trust, and commitment as predictors of logistics performance. Collaboration exerts a direct effect on logistics performance and indirect effects through trust and commitment. The model also accounts for contextual factors, such as technology adoption and market dynamics, which emerged from qualitative findings.

Discussion

The findings align with RBV theory, which posits that intangible resources like collaboration, trust, and commitment are critical for competitive advantage (Barney, 1991). Collaboration enables efficient resource utilization by pooling expertise and infrastructure, as seen in successful partnerships in China's tourism hubs (Sarfraz et al., 2023). Trust and commitment ensure stakeholder alignment, reducing conflicts and enhancing operational consistency (Matopoulos et al., 2007). The U-shaped relationship between collaboration and performance suggests that initial investments in collaboration may strain resources, particularly for small

businesses, but sustained efforts yield significant benefits, such as reduced costs and improved service quality.

The study extends supply chain integration theory by demonstrating how trust and commitment mediate the collaboration-performance relationship in a tourism context (Frohlich & Westbrook, 2001). The stronger effect of collaboration on small businesses highlights their reliance on external networks to overcome resource limitations, a finding consistent with prior research (Wu et al, 2017). Qualitative insights further emphasize the role of technology, such as blockchain-based booking systems, in enhancing transparency and efficiency.

Practically, tourism businesses should prioritize building collaborative networks with clear communication protocols and shared objectives. Trust-building initiatives, such as regular stakeholder meetings and transparent reporting, can strengthen partnerships. Commitment can be fostered through training programs that align employee goals with organizational objectives. Policymakers can support these efforts by offering incentives for public-private partnerships, subsidizing technology adoption, and promoting sustainable practices, such as low-carbon logistics.

Limitations include the study's focus on China, which may limit generalizability to other markets with different cultural or economic contexts. Additionally, the cross-sectional design restricts inferences about causality over time. Future research should adopt longitudinal designs and explore additional mediators, such as digitalization or environmental sustainability, to further refine the causal model.

Conclusions

This study provides robust evidence that supply chain collaboration, organizational trust, and commitment significantly influence logistics performance in tourism businesses. The proposed causal model offers a comprehensive framework for optimizing logistics operations by integrating these factors. For tourism businesses, the findings underscore the importance of investing in collaborative networks, fostering trust, and cultivating commitment to enhance service efficiency and competitiveness. For policymakers, the study highlights the need for supportive policies that incentivize collaboration and technology adoption to build sustainable tourism ecosystems.

Future research should explore the model's applicability in other industries, such as hospitality or retail, and incorporate additional variables, such as digital transformation or regulatory frameworks. Longitudinal studies could further elucidate the dynamic interplay of collaboration, trust, and commitment over time, providing deeper insights into sustainable logistics practices.

Theoretical and Contextual Contribution

This study contributes theoretically by extending the Resource-Based View (RBV) in the context of tourism logistics, demonstrating how intangible assets such as collaboration, trust, and commitment can jointly enhance operational efficiency. It provides empirical validation for the mediating roles of trust and commitment in collaborative frameworks, thus refining supply chain integration theory through a sector-specific lens. Contextually, the study offers

novel insights into China's tourism industry, highlighting how small and medium-sized enterprises (SMEs) can leverage inter-organizational collaboration and digital platforms to overcome logistical constraints. The research also emphasizes the practical relevance of technology-driven trust mechanisms and long-term relationship building, which are increasingly critical in volatile and resource-scarce environments. These findings not only enrich the academic discourse but also inform tourism managers and policymakers aiming to build resilient, sustainable logistics systems within the tourism sector.

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Conflict of Interest

The author declares no competing interests.

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