



Market Intelligence Adoption and Supply Chain Efficiency in the E-Commerce Industry

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Abstract

This study examined the relationship between market intelligence adoption and supply chain efficiency in the e-commerce industry, focusing on selected e-commerce companies in Sichuan Province, China. Market intelligence adoption was assessed in terms of competitor monitoring, predictive analytics, and market environment scanning, while supply chain efficiency was evaluated through inventory management, transportation and logistics, and warehousing and distribution. Using a descriptive research design, data were gathered through a structured questionnaire administered to employees of e-commerce firms. The instrument demonstrated excellent internal consistency, with Cronbach's alpha values ranging from 0.924 to 0.943 across the study variables. Data were analyzed using weighted mean, rank, Shapiro-Wilk test, and Spearman rho correlation. Findings showed that respondents strongly agreed that market intelligence adoption was highly practiced, with market environment receiving the highest assessment, followed by predictive analytics and competitor monitoring. Respondents also strongly agreed that supply chain efficiency was high, with transportation and logistics ranking first, followed by warehousing and distribution and inventory management. Correlation results indicated statistically significant positive relationships between the dimensions of market intelligence adoption and supply chain efficiency. The findings suggest that e-commerce firms that systematically use market intelligence are better positioned to improve operational responsiveness, optimize logistics and inventory practices, and strengthen supply chain performance. The study offers managerial implications for integrating market intelligence into strategic and operational decision-making in e-commerce firms.

Keywords: *market intelligence adoption; supply chain efficiency; e-commerce strategy; predictive analytics; logistics management; inventory management*

1. Introduction

The expansion of the e-commerce industry has significantly changed the way businesses sell products, serve customers, and compete across markets. With the rapid diffusion of digital platforms, mobile technologies, and internet-based transactions, online marketplaces have become central channels for the exchange of goods and services. E-commerce now covers a wide range of consumer products, including apparel, electronics, food, beverages, books, music, and other digital or physical goods. This transformation has increased market reach, improved consumer convenience, expanded product availability, and enabled both small and large businesses to participate in broader commercial networks.

As e-commerce markets become more dynamic and competitive, firms are increasingly required to make decisions based on timely and relevant market information. Market intelligence adoption has therefore become an important strategic capability in the e-commerce industry. It allows firms to gather and interpret information about competitors, customer preferences, market trends, technological developments, and broader environmental conditions. In competitive digital markets, competitor monitoring helps firms track pricing strategies, product offerings, promotional campaigns, and market positioning. Predictive analytics supports the use of data-driven

models to forecast future trends, anticipate customer needs, and guide operational and marketing decisions. Market environment scanning enables firms to monitor economic conditions, technological changes, regulatory shifts, and other external factors that may affect business performance.

Comparable retail case evidence from the Philippines shows that digital disruption can intensify consumer expectations for access, convenience, and assortment transparency, requiring incumbents to build omnichannel and adaptive capabilities (Atento & Atento, 2025; Atento & Atento, 2026).

The importance of market intelligence is especially evident in e-commerce because digital transactions produce large volumes of data on consumer behavior, demand patterns, competitor activity, and operational performance. When properly collected and analyzed, these data can guide more responsive decision-making and improve the alignment between market demand and supply chain operations. In this regard, market intelligence does not function merely as a marketing tool. It also serves as a strategic input for operational planning, logistics coordination, inventory control, and distribution management.

Supply chain efficiency is equally critical in the e-commerce industry. Online consumers expect fast, reliable, and accurate delivery, making inventory management, transportation and logistics, and warehousing and distribution essential components of operational performance. Effective inventory management ensures that products are available when needed while reducing the cost of excess stock. Efficient transportation and logistics systems support the timely movement of goods from suppliers to warehouses and from distribution centers to customers. Well-managed warehousing and distribution processes improve storage, order fulfillment, and delivery reliability. These supply chain functions are directly connected to customer satisfaction, cost management, responsiveness, and competitive advantage.

Despite the recognized importance of both market intelligence and supply chain efficiency, the empirical relationship between these two areas remains a relevant area for further investigation. Market intelligence may help e-commerce firms identify demand shifts, monitor competitive moves, anticipate disruptions, and adjust operational decisions. However, the extent to which market intelligence adoption is associated with supply chain efficiency requires empirical assessment, particularly in fast-growing e-commerce contexts. This is important because e-commerce firms operate in highly competitive environments where weak market awareness may result in inventory mismatches, inefficient logistics planning, delayed deliveries, and reduced responsiveness to consumer demand.

China provides a meaningful context for examining this relationship because of the scale, competitiveness, and technological sophistication of its e-commerce industry. The country's large consumer base, high digital adoption, expanding online platforms, and advanced logistics systems have created a distinctive environment for studying how e-commerce firms use market intelligence to support operational efficiency. Within this context, selected e-commerce companies in Sichuan Province offer an appropriate setting for examining how employees assess market intelligence adoption and supply chain efficiency in actual organizational practice.

This study aimed to determine market intelligence adoption and supply chain efficiency in the e-commerce industry. Specifically, it sought to determine the level of market intelligence adoption in terms of competitor monitoring, predictive analytics, and market environment; assess the level of supply chain efficiency in terms of inventory management, transportation and logistics, and warehousing and distribution; test the significant relationship between market intelligence adoption and supply chain efficiency; and develop an action plan to help e-commerce companies leverage market intelligence for optimizing supply chain operations.

2. Review of Related Literature

2.1 Market Intelligence Adoption as a Strategic Capability

Market intelligence adoption refers to the systematic collection, analysis, and interpretation of market-related information to support business decision-making. It includes information gathered from industry reports, competitor analysis, customer feedback, economic indicators, market trends, and other business intelligence sources. When

adopted effectively, market intelligence allows firms to understand their target markets, identify emerging opportunities, anticipate competitive threats, and align business strategies with changing market conditions. Prior literature has associated market intelligence and related market capabilities with stronger market responsiveness and firm performance, particularly when firms are able to transform information into strategic action (Falahat et al., 2020; Haon et al., 2023).

The literature also emphasizes that market intelligence requires a systematic process. Firms must define the purpose of intelligence gathering, identify appropriate data sources, use suitable analytical tools, and ensure the reliability and relevance of the information collected. In the context of supply and business markets, intelligence acquisition supports information processing, procurement awareness, and strategic decision-making (Lorentz et al., 2020). Industry intelligence is also increasingly linked with the identification of technological and market trends, particularly in settings influenced by Industry 4.0 and digital transformation (Cuellar et al., 2023).

Technology adoption evidence from Philippine SMEs likewise indicates that workflow compatibility, usability, data security, implementation cost, and competitive pressure shape whether digital systems are accepted as tools for strategic and operational improvement (Carandang et al., 2026).

For e-commerce firms, market intelligence is particularly important because online markets generate large volumes of data about customers, competitors, transactions, and digital behavior. Digital platforms create continuous information flows that may be used to track consumer demand, monitor market changes, and support strategic and operational decisions. Thus, market intelligence adoption may contribute to competitiveness by improving the firm's ability to interpret market signals and transform them into business action.

2.2 Competitor Monitoring, Predictive Analytics, and Market Environment Scanning

Market intelligence adoption is commonly expressed through competitor monitoring, predictive analytics, and market environment scanning. Competitor monitoring involves the systematic observation and analysis of competitor pricing, marketing campaigns, product offerings, customer engagement, and market behavior. Through competitor monitoring, firms can identify potential threats, discover market opportunities, and adjust their own strategies based on industry movements. Intelligent systems and analytical tools have been used to identify trends in market environments, while digital technologies have increasingly reshaped competitive analysis in consumer markets (Du & Xie, 2021; Hernández-Cruz et al., 2023).

Predictive analytics is another important component of market intelligence because it allows firms to use historical data, statistical models, and machine learning techniques to anticipate future trends. Predictive analytics may support demand forecasting, customer behavior analysis, risk identification, and strategic planning. Market intelligence has been linked with pricing, marketing communication, and innovation capabilities, which suggests that analytical interpretation of market data may strengthen decision quality and competitive positioning (Falahat et al., 2020).

Related qualitative evidence on AI adoption in accounting practice shows that analytics and automation are often first accepted as decision-support tools, while deeper integration remains constrained by governance, top-management sponsorship, and data-readiness issues (Bendal et al., 2026).

Market environment scanning broadens the focus beyond direct competitors and internal forecasts. It includes monitoring economic conditions, technological advancements, regulatory changes, social trends, consumer preferences, and broader industry developments. Supply-market intelligence literature indicates that firms process external information to reduce uncertainty and improve decisions affecting procurement, supply, and market positioning (Lorentz et al., 2020). For e-commerce firms, this scanning function is important because external changes can quickly affect customer demand, logistics requirements, pricing structures, and platform-based competition.

In consumer-facing education markets, social-media discourse has also been used as a source of strategic market insight, illustrating how digital traces of customer or community values can inform marketing design and positioning decisions (Atento & Espelita, 2025).

2.3 Supply Chain Efficiency in E-Commerce Operations

Supply chain efficiency refers to the optimization of the flow of goods, services, and information from suppliers to customers. It involves reducing waste, improving coordination, minimizing delays, and strengthening responsiveness across the supply chain. Supply chain studies emphasize the need to balance efficiency, robustness, and complexity, particularly when firms face disruptions and shifting market conditions (Monostori, 2021). In e-commerce, supply chain efficiency is critical because customers expect fast fulfillment, accurate order processing, reliable delivery, and real-time responsiveness.

Inventory management is one of the central dimensions of supply chain efficiency. It involves planning, organizing, and controlling inventory levels to ensure product availability while minimizing excess stock and related storage costs. Digital technologies, artificial intelligence, blockchain, and advanced optimization tools have increasingly been discussed as mechanisms for improving supply chain decisions, visibility, and sustainability (Abualigah et al., 2023; Banerjee, 2019; Singh et al., 2023; Wu et al., 2023). In e-commerce, poor inventory management may lead to stockouts, delayed fulfillment, lost sales, and reduced customer satisfaction.

Transportation and logistics are also central to supply chain efficiency. These functions involve the movement of goods from suppliers to warehouses, distribution centers, and final customers. Effective logistics systems require route optimization, coordination mechanisms, contingency planning, and tracking mechanisms. Studies on supply chain coordination and resilience highlight the importance of reliable networks, stakeholder coordination, and adaptive planning in strengthening supply chain performance (Hong et al., 2023; Lu et al., 2019). Warehousing and distribution further support operational efficiency by enabling organized storage, order fulfillment, inventory tracking, and timely delivery. Retail supply chain studies also indicate that efficiency analysis can be used to assess how supply chain processes contribute to sustainability and performance (Álvarez-Rodríguez et al., 2020).

2.4 Market Intelligence and Supply Chain Responsiveness

The relationship between market intelligence adoption and supply chain efficiency may be understood through responsiveness. Market intelligence provides information about demand patterns, competitor behavior, technological changes, and environmental shifts, while supply chain efficiency determines how effectively firms translate that information into operational action. When firms monitor competitors, forecast demand, and scan the market environment, they become better equipped to adjust inventory levels, optimize logistics decisions, and improve distribution planning.

Information processing and intelligence acquisition are especially relevant to supply chain decision-making because supply chains operate under uncertainty. Lorentz et al. (2020) argued that supply-market intelligence supports supply decisions by improving the way firms acquire and process external information. Monostori (2021) further emphasized that supply chains must manage the tension between efficiency and robustness, particularly when disruptions create ripple effects across networks. These perspectives suggest that market intelligence can strengthen supply chain responsiveness by allowing firms to anticipate changes rather than respond only after disruptions occur.

Comparable analytics frameworks argue that data integration and analytics capability improve decision quality when insights are embedded in organizational routines, reinforcing the need to connect market intelligence outputs with operational decision-making (Atento et al., 2025).

In the e-commerce context, market intelligence may support supply chain efficiency in at least three ways. First, competitor monitoring may help firms adjust pricing, promotions, and product availability based on market movements. Second, predictive analytics may improve demand forecasting and inventory planning, reducing the risk

of stockouts or excess inventory. Third, market environment scanning may help firms prepare for technological, economic, and regulatory changes that affect logistics and distribution decisions. These mechanisms indicate that market intelligence adoption can function as a strategic input for supply chain responsiveness, although empirical evidence remains necessary to determine the strength and significance of this relationship in specific industry contexts.

2.5 Synthesis and Literature Gaps

The reviewed literature shows that market intelligence adoption and supply chain efficiency are both important to firm competitiveness. Market intelligence supports strategic awareness by helping firms interpret competitor behavior, anticipate market trends, and monitor the external environment (Falahat et al., 2020; Haon et al., 2023; Lorentz et al., 2020). Supply chain efficiency, meanwhile, supports operational performance through effective inventory management, transportation and logistics, and warehousing and distribution (Hong et al., 2023; Monostori, 2021; Singh et al., 2023). Together, these bodies of literature suggest that firms may improve operational responsiveness when market intelligence is integrated into supply chain decision-making.

However, the relationship between market intelligence adoption and supply chain efficiency remains underexplored in the specific context of e-commerce firms. Much of the literature addresses market intelligence, predictive analytics, or supply chain efficiency as separate areas. Other studies focus on specific industries, technologies, or operational systems without directly examining how market intelligence adoption relates to supply chain efficiency across multiple operational dimensions. This gap is important because e-commerce firms operate in highly dynamic environments where market information and operational responsiveness must be closely aligned. The present study responds to this gap by examining the relationship between market intelligence adoption, measured through competitor monitoring, predictive analytics, and market environment scanning, and supply chain efficiency, measured through inventory management, transportation and logistics, and warehousing and distribution.

3. Methodology

3.1 Research Design

This study used a descriptive research design to examine market intelligence adoption and supply chain efficiency in the e-commerce industry. The design was appropriate because the study aimed to describe respondents' assessments of existing organizational practices and determine the relationship between market intelligence adoption and supply chain efficiency based on survey data.

3.2 Respondents of the Study

The respondents were 200 employees from selected e-commerce companies in Sichuan Province, China. The study focused on employees of e-commerce firms because they were considered capable of assessing organizational practices related to competitor monitoring, predictive analytics, market environment scanning, inventory management, transportation and logistics, and warehousing and distribution.

3.3 Sampling Technique

The study used quota sampling in selecting respondents from the e-commerce industry. This sampling approach allowed the researcher to gather data from employees representing selected e-commerce firms within the research locale.

3.4 Research Instrument

The study used a structured questionnaire as the primary data-gathering instrument. The questionnaire consisted of two main parts. The first part measured market intelligence adoption in terms of competitor monitoring, predictive analytics, and market environment. The second part measured supply chain efficiency in terms of inventory management, transportation and logistics, and warehousing and distribution. Each dimension contained

five items, and responses were measured using a four-point Likert scale: 3.50-4.00 for strongly agree, 2.50-3.49 for agree, 1.50-2.49 for disagree, and 1.00-1.49 for strongly disagree.

The questionnaire was subjected to pilot testing using 30 respondents. Reliability was assessed through Cronbach’s alpha using SPSS version 28. As shown in Table 1, all six dimensions obtained alpha values above 0.90, indicating excellent internal consistency.

3.5 Data Gathering Procedure

Before data collection, the necessary approvals were obtained from the participating companies. Respondents were informed of the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. The validated questionnaire was distributed through online channels, including WeChat, email, and Questionnaire Star. Responses were collected, checked for completeness, and prepared for statistical analysis.

3.6 Data Analysis

Weighted mean and rank were used to describe the respondents’ assessment of market intelligence adoption and supply chain efficiency. The Shapiro-Wilk test was used to assess normality. Since the p-values were below 0.05, the data were treated as non-normally distributed. Spearman rho correlation was therefore used to test the significant relationship between market intelligence adoption and supply chain efficiency. All statistical analyses were performed using SPSS version 28.

3.7 Ethical Considerations

The study observed ethical protocols in the conduct of data collection. Respondents were informed about the research purpose, and participation was voluntary. The researcher ensured confidentiality and anonymity by not requiring respondents to disclose their names in the questionnaire. The data gathered were used only for research purposes, and the safety and welfare of the respondents were considered throughout the research process.

Table 1. Reliability Analysis of the Research Instrument

Variables	Cronbach’s Alpha	Number of Items	Interpretation
Competitor Monitoring	0.928	5	Excellent
Predictive Analytics	0.934	5	Excellent
Market Environment	0.938	5	Excellent
Inventory Management	0.924	5	Excellent
Transportation and Logistics	0.943	5	Excellent
Warehousing and Distribution	0.930	5	Excellent

4. Results and Discussion

In this journal version, the detailed item-level tables were consolidated into summary tables to avoid a thesis-style table dump. The retained tables present the major descriptive and inferential findings needed to answer the study objectives.

4.1 Market Intelligence Adoption

Table 2 presents the summary results for market intelligence adoption. Overall, the respondents strongly agreed that market intelligence adoption was practiced in the e-commerce firms surveyed, as reflected in the composite mean of 3.71. Among the three dimensions, market environment received the highest mean score of 3.73, followed by predictive analytics with a mean of 3.72, and competitor monitoring with a mean of 3.69.

Table 2. Summary of Market Intelligence Adoption

Dimension	Weighted Mean	Verbal Interpretation	Rank
Competitor Monitoring	3.69	Strongly Agree	3

Predictive Analytics	3.72	Strongly Agree	2
Market Environment	3.73	Strongly Agree	1
Composite Mean	3.71	Strongly Agree	

The results indicate that the participating e-commerce firms placed strong emphasis on monitoring the broader market environment. This suggests that technological developments, competitive threats, economic signals, and external market conditions were perceived as important inputs in strategic decision-making. The high rating for predictive analytics also suggests that firms were using analytical tools to anticipate market changes and optimize decisions. Competitor monitoring, although ranked third, still received a strong agreement rating, indicating that firms continued to value competitor-related intelligence, particularly in relation to marketing campaigns, product offerings, and pricing activities.

At the item level, the highest-rated market intelligence indicator was awareness of the latest technological advancements in the industry, with a weighted mean of 3.79. This was followed by the use of advanced analytics tools for predictive modeling and the consideration of the market environment in strategic decisions. The relatively lower item-level ratings were found in regular tracking of competitor pricing strategies and tracking changes in consumer preferences and trends. These results suggest that while market intelligence adoption was generally high, there may still be room to improve more granular forms of market monitoring, especially those related to pricing movements and consumer preference shifts.

4.2 Supply Chain Efficiency

Table 3 presents the summary results for supply chain efficiency. The respondents strongly agreed that supply chain efficiency was evident in the firms surveyed, as shown by the composite mean of 3.72. Transportation and logistics ranked first with a mean of 3.76, followed by warehousing and distribution with a mean of 3.75, and inventory management with a mean of 3.66.

Table 3. Summary of Supply Chain Efficiency

Dimension	Weighted Mean	Verbal Interpretation	Rank
Inventory Management	3.66	Strongly Agree	3
Transportation and Logistics	3.76	Strongly Agree	1
Warehousing and Distribution	3.75	Strongly Agree	2
Composite Mean	3.72	Strongly Agree	

The results suggest that the surveyed e-commerce firms were perceived to have efficient supply chain operations, particularly in transportation and logistics. This is consistent with the operational demands of e-commerce, where timely delivery, route optimization, reliable logistics processes, and contingency planning are essential to customer satisfaction and market competitiveness. The high mean for warehousing and distribution also indicates that firms were perceived to have effective systems for tracking warehouse inventory, organizing distribution networks, and preparing for disruptions in warehousing or distribution operations.

Inventory management, while still assessed positively, received the lowest mean among the three dimensions. The item-level results indicate that the lowest-rated supply chain indicator was the availability of accurate and up-to-date inventory data, with a weighted mean of 3.38. This suggests a possible operational weakness. Even when respondents strongly agreed that firms had systems to avoid stockouts and procedures for managing excess inventory, the comparatively lower score for inventory data accuracy implies that real-time data reliability may require further improvement. In e-commerce, this is important because inaccurate inventory data can affect order fulfillment, forecasting, stock replenishment, and customer service.

4.3 Relationship Between Market Intelligence Adoption and Supply Chain Efficiency

Table 4 presents the relationship between the dimensions of market intelligence adoption and supply chain efficiency. All relationships were positive and statistically significant. The results indicate that higher levels of competitor monitoring, predictive analytics, and market environment scanning were associated with higher levels of inventory management, transportation and logistics, and warehousing and distribution.

Table 4. Relationship Between Market Intelligence Adoption and Supply Chain Efficiency

Market Intelligence Dimension	Supply Chain Efficiency Dimension	Spearman's rho	p-value	Interpretation
Competitor Monitoring	Inventory Management	0.459	< .001	Significant
Competitor Monitoring	Transportation and Logistics	0.389	< .001	Significant
Competitor Monitoring	Warehousing and Distribution	0.301	< .001	Significant
Predictive Analytics	Inventory Management	0.453	< .001	Significant
Predictive Analytics	Transportation and Logistics	0.471	< .001	Significant
Predictive Analytics	Warehousing and Distribution	0.315	< .001	Significant
Market Environment	Inventory Management	0.451	< .001	Significant
Market Environment	Transportation and Logistics	0.416	< .001	Significant
Market Environment	Warehousing and Distribution	0.454	< .001	Significant

The strongest correlation was found between predictive analytics and transportation and logistics ($\rho = 0.471$), followed by competitor monitoring and inventory management ($\rho = 0.459$), market environment and warehousing and distribution ($\rho = 0.454$), predictive analytics and inventory management ($\rho = 0.453$), and market environment and inventory management ($\rho = 0.451$). These results suggest that analytical and market-scanning capabilities may be particularly relevant to operational responsiveness in e-commerce supply chains.

The weakest relationship was found between competitor monitoring and warehousing and distribution ($\rho = 0.301$), although the relationship remained statistically significant. This suggests that competitor monitoring may be more directly related to inventory and logistics decisions than to warehousing and distribution practices. Warehousing and distribution may depend more heavily on internal systems, infrastructure, network design, and operational capacity than on direct competitor observation alone.

4.4 Proposed Managerial Action Plan

The action plan in Table 5 translates the descriptive and correlational findings into managerial priorities. It focuses on strengthening market intelligence adoption while linking intelligence outputs to supply chain decision-making.

Table 5. Proposed Managerial Action Plan for Strengthening Market Intelligence Adoption

Key Result Area	Priority Action	Responsible Unit	Success Indicator
Competitor Monitoring	Improve real-time monitoring of competitor pricing, promotions,	Marketing, Sales, Business Intelligence	Regular competitor intelligence reports and documented strategy

	marketing campaigns, and product offerings.		adjustments.
Predictive Analytics	Improve data quality, accessibility, and predictive modeling capability for demand, customer behavior, and supply chain planning.	Analytics, IT, Data Governance, Operations	Improved data completeness, deployed dashboards, and predictive outputs used in planning.
Market Environment Scanning	Institutionalize scanning of technological, economic, regulatory, and consumer trend signals affecting e-commerce operations.	Strategy, Marketing, Operations	Periodic environmental scanning reports and strategic planning inputs.
Supply Chain Integration	Connect market intelligence outputs with inventory, logistics, warehousing, and distribution decisions.	Operations, Logistics, Warehousing, Supply Chain Management	Improved coordination between market forecasts and operational decisions.

4.5 Discussion

The findings indicate that market intelligence adoption was strongly evident among the surveyed e-commerce firms. The highest-rated dimension was market environment, suggesting that firms were highly attentive to external conditions affecting business strategy. This is important in e-commerce because firms must respond not only to competitors but also to shifts in technology, regulation, demand behavior, and platform-based market dynamics. The result aligns with literature emphasizing market intelligence as a strategic capability that supports environmental awareness, market adaptation, and evidence-based decision-making (Falahat et al., 2020; Haon et al., 2023; Lorentz et al., 2020).

Predictive analytics also emerged as a highly rated dimension of market intelligence adoption. This suggests that e-commerce firms recognize the value of analytical tools in forecasting trends, optimizing marketing activities, and anticipating changes in consumer behavior. This finding is consistent with literature that treats market intelligence and analytics as decision-support mechanisms for improving anticipation, interpretation, and strategic responsiveness (Du & Xie, 2021; Falahat et al., 2020). However, the relatively lower item score for access to necessary data indicates that analytics adoption may still be constrained by data quality, accessibility, or integration issues.

In terms of supply chain efficiency, transportation and logistics received the highest assessment. This reflects the centrality of delivery speed, route optimization, and logistics reliability in e-commerce operations. Since online customers often evaluate firms based on fulfillment speed and delivery dependability, logistics efficiency becomes a direct contributor to customer satisfaction and competitive positioning. This result is consistent with studies emphasizing coordination, resilience, and network responsiveness as important components of supply chain performance (Hong et al., 2023; Lu et al., 2019; Monostori, 2021).

Inventory management ranked lowest among the supply chain efficiency dimensions, although it still received a strong agreement rating. The lower rating for accurate and up-to-date inventory data is important because inventory visibility is foundational to demand forecasting, stock replenishment, and order fulfillment. This finding suggests that the surveyed firms may have adequate inventory procedures but still face challenges in ensuring real-time data accuracy. In e-commerce, this issue can lead to stockouts, overstocking, delayed fulfillment, or inaccurate customer-facing availability information.

The correlation results provide empirical support for the relationship between market intelligence adoption and supply chain efficiency. All dimensions of market intelligence adoption were significantly and positively

associated with all dimensions of supply chain efficiency. This suggests that firms that are more active in monitoring competitors, using predictive analytics, and scanning the market environment also tend to report better inventory management, logistics performance, and warehousing and distribution efficiency. The results are consistent with the view that intelligence capabilities improve organizational responsiveness by helping firms convert market information into operational decisions (Lorentz et al., 2020; Monostori, 2021).

However, the findings should be interpreted as evidence of association rather than causation. The descriptive-correlational design does not establish that market intelligence adoption directly causes supply chain efficiency to improve. Rather, the results indicate that the two constructs move together in a statistically significant and positive direction. From a managerial standpoint, this still provides useful evidence. It suggests that e-commerce firms may benefit from integrating market intelligence systems with supply chain planning, especially in demand forecasting, inventory synchronization, logistics coordination, and contingency planning.

Overall, the results support the argument that market intelligence is not only a marketing or strategic planning function. In the e-commerce industry, it also has operational relevance. Competitor information, predictive analytics, and environmental scanning can help firms anticipate demand, align inventory decisions, improve logistics responsiveness, and strengthen supply chain resilience. For JESMI positioning, the study contributes to the discussion on how market intelligence and analytics adoption can support e-commerce strategy, innovation in business operations, and supply chain competitiveness.

5. Conclusions, Recommendations, and Implications

5.1 Conclusions

Market intelligence adoption was highly evident among the surveyed e-commerce firms. The respondents strongly agreed that their organizations practiced competitor monitoring, predictive analytics, and market environment scanning. Among these dimensions, market environment received the highest assessment, indicating that firms placed particular importance on external market conditions, technological developments, and strategic environmental awareness.

Supply chain efficiency was also highly evident among the surveyed firms. The respondents strongly agreed that their organizations demonstrated efficiency in inventory management, transportation and logistics, and warehousing and distribution. Transportation and logistics received the highest assessment, suggesting that movement of goods, route optimization, delivery timeliness, and logistics coordination were perceived as the strongest areas of supply chain performance.

Market intelligence adoption had a statistically significant positive relationship with supply chain efficiency. Competitor monitoring, predictive analytics, and market environment scanning were all significantly associated with inventory management, transportation and logistics, and warehousing and distribution. This indicates that e-commerce firms with stronger market intelligence practices also tended to report higher levels of supply chain efficiency.

The findings support the development of an action plan focused on strengthening market intelligence adoption and linking it more directly with supply chain decision-making. Particular attention should be given to competitor analysis, data accessibility, predictive modeling, inventory data accuracy, and the integration of market insights into operational planning.

5.2 Recommendations

E-commerce firms may strengthen their market intelligence systems by institutionalizing regular competitor monitoring, market environment scanning, and predictive analytics reporting. These activities should not remain isolated within marketing units but should be shared with operations, logistics, warehousing, and inventory teams to improve decision-making across the supply chain.

Management may improve the quality and accessibility of data used for predictive analytics. Since predictive analytics showed strong relevance to transportation, logistics, and inventory management, firms should invest in data governance, integrated databases, analytics dashboards, and staff training to ensure that market data can be translated into actionable operational insights.

Operations managers may prioritize the improvement of real-time inventory data accuracy. Although inventory management was still rated positively, it ranked lowest among the supply chain efficiency dimensions. This suggests the need for stronger inventory tracking systems, synchronized warehouse records, demand forecasting tools, and routine data validation procedures.

Logistics and distribution teams may continue enhancing route optimization, delivery monitoring, and contingency planning. Since transportation and logistics received the highest assessment, firms should sustain this advantage while ensuring that logistics efficiency remains aligned with market demand, customer expectations, and competitive conditions.

E-commerce firms may use the proposed action plan as a managerial guide for improving the connection between market intelligence and supply chain operations. The action plan should be treated as a practical framework for cross-functional coordination rather than as a separate marketing initiative.

Future researchers may conduct longitudinal or causal studies to determine whether improvements in market intelligence adoption directly lead to measurable improvements in supply chain efficiency. Future studies may also compare different e-commerce platforms, regions, firm sizes, or countries to determine whether the relationship between market intelligence and supply chain efficiency varies across business contexts.

5.3 Implications of the Study

The study has managerial, operational, and research implications. From a managerial perspective, the findings suggest that market intelligence should be treated as a strategic resource that supports both market-facing and operational decisions. Competitor monitoring, predictive analytics, and market environment scanning can provide useful information for adjusting inventory plans, logistics priorities, and distribution strategies.

Operationally, the study implies that supply chain efficiency in e-commerce depends not only on internal systems but also on the firm's ability to interpret external market signals. Firms that understand technological trends, customer movements, competitor behavior, and environmental changes may be better positioned to align supply chain activities with market demand.

For research, the study contributes to the discussion on the relationship between intelligence-driven decision-making and supply chain performance in e-commerce. It shows that market intelligence adoption and supply chain efficiency are positively associated, although the design does not establish causality. This provides a basis for future empirical studies using longitudinal designs, structural equation modeling, or comparative industry analysis.

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