

Effect of Inventory Management Practices on Supply Chain Performance

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Abstract

Improving supply chain performance largely depends on effective inventory management, particularly in manufacturing organizations where efficiency, cost control, and responsiveness are critical for competitiveness. Although previous studies have examined inventory management practices, many focused on individual practices and adopted industry-wide perspectives, resulting in limited firm-level evidence on their combined effect on supply chain performance. The aim of this study was to determine the effect of Strategic Supplier Partnerships, Economic Order Quantity (EOQ), Just-In-Time (JIT) practices, and Material Resource Planning (MRP) on supply chain performance, grounded on supply chain and resource-based theoretical perspectives. The study adopted a quantitative research approach using a descriptive-correlational and causal research design. Data were collected through a structured, self-administered survey questionnaire administered to employees of food manufacturing firms in Cabuyao City, Laguna who were directly involved in inventory planning, inventory replenishment, supplier coordination, or inventory-related system use. A five-point Likert scale was used, and data were analyzed using descriptive statistics and multiple regression analysis to determine the effect of inventory management practices on supply chain performance. The findings indicated that inventory management practices had a significant influence on supply chain performance, particularly in improving operational efficiency, cost control, and delivery reliability. The study contributed to existing literature by providing context-specific empirical evidence on the combined effect of inventory management practices in supporting managerial decision-making in food manufacturing organizations.

Keywords: Inventory management practices; supply chain performance

1. INTRODUCTION

1.1 Background of the Study

Effective supply chain performance has become a critical priority for manufacturing and logistics organizations operating in increasingly competitive and dynamic business environments. The ability to meet customer expectations, maintain operational efficiency, and minimize costs depends heavily on the strategic

management of inventory (Onikoyi, 2024; Acquah, 2024). Empirical evidence indicates that effective inventory management practices can improve organizational performance by as much as 62.2% in service and manufacturing-related organizations (Acquah, 2024). Inventory management practices play a central role in determining material availability, production continuity, and distribution responsiveness, making them a cornerstone of modern supply chain strategies (Kisinga et al., 2024; Boateng, 2024). Studies further report that organizations implementing effective inventory management practices experience performance improvements of up to 86.8%, highlighting the substantial impact of inventory-related decisions on operational outcomes (Boateng, 2024).

Despite these reported benefits, according to the Food and Agriculture Organization (FAO), approximately 14% of food is lost before reaching retail outlets and an additional 17% is wasted at the retail and consumption stages, largely due to weaknesses in demand forecasting, ordering decisions, and coordination across supply chain functions as cited in Seyam et al. (2024). Poor inventory decisions often result in stockouts, overstocking, and delayed order fulfillment, which negatively impact operational costs, customer satisfaction, and overall supply chain performance (Sivakumar & Premraj Kumar, 2025; Prameswari et al., 2024). Seyam et al. (2024) also emphasized that insufficient adoption of digital technologies such as inventory planning systems and data-sharing platforms reduces visibility and responsiveness in supply chain operations, thereby weakening the performance impact of inventory management practices. These challenges are particularly evident in manufacturing environments, where inventory-related decisions directly affect production continuity, resource utilization, and service delivery, especially in sectors such as food manufacturing where product perishability and demand variability increase operational complexity.

Inventory management strategies aim to reconcile the uncertainty in demand with the optimization of resources, thereby minimizing both holding and ordering costs while ensuring that materials flow smoothly through the supply chain (Santosh et al., 2025). By adopting well-organized inventory systems, companies can improve resource efficiency, refine production scheduling, and promote effective collaboration among supply chain partners (Lean Supply Chain Theory (Krafcik et al., 1988)). Research findings indicate that these practices decrease operational inefficiencies, enhance the reliability of processes, and reinforce competitive advantage (Sharma, 2025). However, existing studies have largely examined inventory management practices individually or within broad industry contexts, resulting in limited firm-level evidence on how multiple practices collectively influence supply chain performance, particularly within food manufacturing firms.

Furthermore, there is a lack of context-specific empirical studies focusing on food manufacturing firms in Cabuyao City, Laguna, where inventory management functions are often integrated. This gap limits the ability of organizations to fully understand how specific inventory management practices contribute to improving

supply chain performance within their operational setting. Hence, this study aims to examine the combined effect of Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Requirements Planning on supply chain performance in food manufacturing firms in Cabuyao City, Laguna.

1.1.1 Literature Review

Several inventory management approaches have been widely used by manufacturing and logistics firms to improve supply chain performance. Among the most common are strategic supplier partnerships, Just-In-Time (JIT), Economic Order Quantity (EOQ), and Material Resource Planning (MRP). Strategic supplier partnerships emphasize long-term cooperation between organizations and their suppliers, allowing both parties to share information, coordinate activities, and work toward common goals. These partnerships help ensure stable procurement, shorter lead times, and greater flexibility in responding to changing customer demand (Boateng, 2024; Prameswari et al., 2024; Santosh et al., 2025). From the perspective of the Resource-Based View Theory, strong supplier relationships serve as valuable organizational resources because they build trust and integration across the supply chain, enabling firms to align inventory decisions with operational and performance objectives (Barney, 1991).

Just-In-Time focuses on delivering materials only when they are needed for production or customer demand, which helps reduce excess inventory and operational waste (Sivakumar & Premraj Kumar, 2025). Previous studies indicate that firms implementing JIT experience faster inventory movement, lower storage costs, improved efficiency, and better responsiveness to customer requirements (Prameswari et al., 2024). In the same way, the Economic Order Quantity model supports inventory decision-making by identifying the most cost-effective order size that balances ordering and holding costs (Onikoyi, 2024). Applying EOQ allows organizations to manage inventory more efficiently, improve order scheduling, and maintain stable supply chain operations across manufacturing and distribution activities (Santosh et al., 2025).

Material Resource Planning (MRP) contributes significantly to effective inventory control by integrating demand forecasts, production plans, and purchasing activities into a single, coordinated planning framework (Acquah, 2024; Sharma, 2025). Through MRP, firms are able to determine material resource more accurately, reduce uncertainties associated with lead times, and enhance coordination between production processes and warehouse operations (Prameswari et al., 2024). In actual operations, this leads to more reliable planning, improved visibility of inventory levels, and more consistent supply chain performance, especially in manufacturing environments where processes are highly interdependent.

1.1.2 Significance of the Study

This study will benefit the following:

To management and decision-makers, the findings offer practical insights into how Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Resource Planning can enhance supply chain efficiency, cost control, and responsiveness. The results may guide managers in prioritizing inventory strategies that improve overall supply chain performance.

To supply chain personnel, the study highlights the role of inventory-related decision-making and supplier coordination in achieving effective supply chain outcomes. The findings may serve as a reference for improving planning, replenishment, and coordination practices within manufacturing organizations.

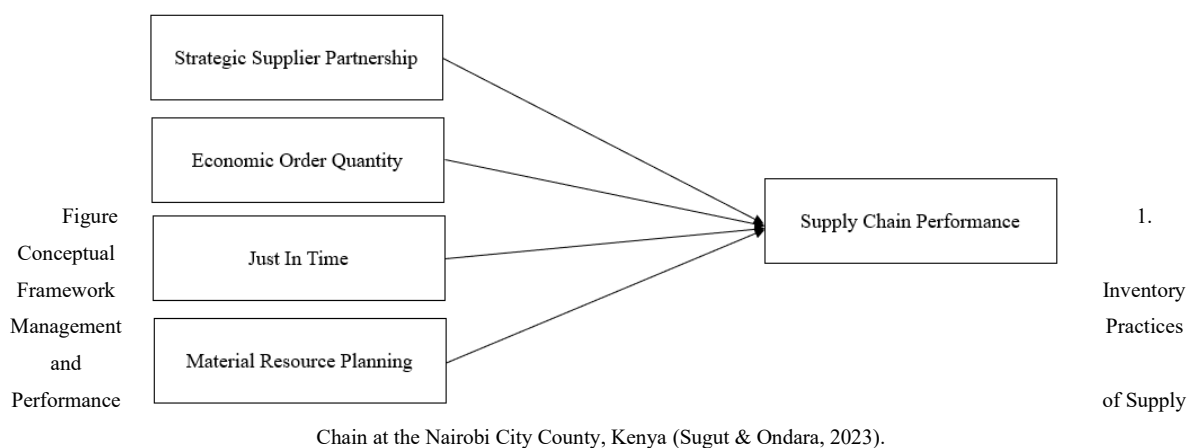
To food manufacturing firms, particularly those operating in areas such as Cabuyao City, Laguna, the study provides insights that reflect operational realities where inventory related functions are often integrated. This can support firms in benchmarking their inventory management practices against empirically tested relationships.

To future researchers, the findings may serve as a foundation for further studies that explore other supply chain variables, industries, or analytical approaches to deepen understanding of inventory management and performance relationships.

1.2 Research Frameworks

1.2.1 Conceptual Framework

This current research is anchored on the conceptual framework illustrated in Figure 1 in the study entitled Inventory Management Practices and Performance of Supply Chain at the Nairobi City County, Kenya (Sugut & Ondara, 2023).



The conceptual framework illustrates the relationship between the independent variables Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Resource Planning and the dependent variable, Supply Chain Performance. Strategic Supplier Partnerships refer to the collaborative relationships between the organization and its suppliers aimed at improving coordination, information sharing, and reliability of supply. Economic Order Quantity focuses on determining optimal order sizes to minimize total inventory costs. Just-In-Time practices emphasize reducing excess inventory by synchronizing material arrivals with actual demand, while Material Resource Planning involves systematic planning and scheduling of materials to support production and inventory needs. Collectively, these inventory management practices influence Supply Chain Performance, which reflects the efficiency, cost effectiveness, responsiveness, and overall effectiveness of supply chain operations in achieving organizational objectives.

The framework assumes that effective implementation of inventory management practices leads to improved supply chain outcomes. Strategic Supplier Partnerships enhance supply reliability and reduce disruptions, while Economic Order Quantity supports cost optimization and inventory balance. Just-In-Time practices contribute to reduced holding costs and improved responsiveness, and Material Resource Planning strengthens coordination between inventory availability and operational requirements. The relationships depicted in the framework emphasize that inventory management practices function as key drivers of supply chain performance, highlighting their role in improving operational efficiency, service delivery, and overall supply chain effectiveness.

1.2.2 Operational Framework

The study is guided by the operational framework illustrated in Figure 3, which examines the effect of Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Resource Planning on Supply Chain Performance. This framework provides a clear basis for evaluating how inventory management practices contribute to improved supply chain performance.

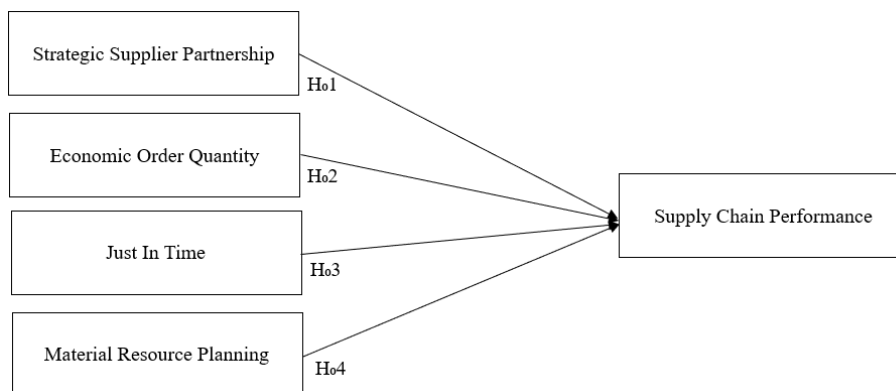


Figure 3.

Operational
Framework

1.3 Objectives of the Study

This study aims to examine the effect of inventory management practices on supply chain performance. Specifically, it seeks to:

1. Describe the inventory management practices of food manufacturing firms in Cabuyao City, Laguna.
2. Describe the supply chain performance of food manufacturing firms in Cabuyao City, Laguna.
3. Determine whether Strategic Supplier Partnership (SSP), Economic Order Quantity (EOQ), Just-In-Time (JIT) and Material Resource Planning (MRP) significantly affect supply chain performance.

1.4 Hypothesis

This study tests the following hypotheses:

- H₀₁: Strategic Supplier Partnerships does not significantly affect supply chain performance.
- H₀₂: Economic order quantity does not significantly affect supply chain performance.
- H₀₃: Just-In-Time does not significantly affect supply chain performance.
- H₀₄: Material Resource Planning does not significantly affect supply chain performance.

2. METHODS

This section describes the methodology used to generate the study's findings, including the research design, study locale, respondents, sampling approach, research instruments, and data analysis procedures that guided data collection and interpretation.

2.1 Research Design

This study employed a quantitative descriptive-correlational research design to examine the relationship between inventory management practices, namely Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Requirements Planning, and supply chain performance.

To examine the direct effects of inventory management practices on supply chain performance, the study used multiple linear regression analysis. The independent variables—Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time, and Material Requirements Planning—were entered into the model simultaneously. This method allowed the researcher to determine the effect of each variable on supply chain performance while considering the influence of the other variables.

2.2 Locale of the Study

The study was conducted in Cabuyao City, Laguna, Philippines, focusing on the food manufacturing sector. Cabuyao City was chosen due to its concentration of food manufacturing firms, making it a suitable setting for examining inventory management practices and supply chain performance.

2.3 Respondents of the Study

The respondents of the study consisted of employees from food manufacturing firms in Cabuyao City, Laguna who were directly involved in inventory planning, inventory replenishment, supplier coordination, or inventory-related system use. These respondents were selected because their roles provided direct exposure to inventory management practices, specifically Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Requirements Planning.

2.4 Sampling Design

The study used a purposive sampling technique. The respondents consisted of employees from food manufacturing firms in Cabuyao City, Laguna who were directly involved in inventory planning, inventory replenishment, supplier coordination, or inventory-related system use. This ensured that only individuals with sufficient knowledge and exposure to inventory management practices were included in the study.

The required sample size was determined using G*Power statistical analysis to ensure sufficient statistical power for hypothesis testing. Using a medium effect size ($f^2 = 0.15$), a significance level ($\alpha = 0.05$), a statistical power of ($1 - \beta = 0.95$), and four (4) predictors, the analysis indicated that a minimum sample size of 129 respondents was required. However, a total of 138 respondents were obtained in this study, exceeding the minimum requirement and thereby increasing the reliability of the statistical analysis.

2.5 Research Tools and Instruments

Data were collected using a structured survey questionnaire adapted from the studies of Sugut and Ondara (2023) and Xiao and Khan (2024). The questionnaire was designed to measure the key variables of the study, namely Strategic Supplier Partnerships, Economic Order Quantity (EOQ), Just-In-Time (JIT) practices, Material Requirements Planning (MRP), and Supply Chain Performance.

The instrument consisted of seven (7) items for Strategic Supplier Partnerships, five (5) items for Economic Order Quantity, six (6) items for Just-In-Time, five (5) items for Material Requirements Planning, and seven (7) items for Supply Chain Performance. All items were measured using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5) to capture respondents' perceptions of inventory management practices and supply chain performance.

Prior to full deployment, the questionnaire underwent pre-testing with 30 respondents to assess reliability, with Cronbach's alpha used to determine internal consistency. Data were collected through an online survey administered via Google Forms and distributed through various digital communication platforms, including Facebook Messenger, LinkedIn, Viber, and email.

2.6 Data Analysis and Interpretation

The mean was used to summarize the respondents' perceptions of the study variables using the following verbal interpretation:

Table 1. Mean Ranges of Verbal Interpretation

Scale Point	Mean Range	Verbal Interpretation
5	4.21 – 5.00	Very High
4	3.41 – 4.20	High
3	2.61 – 3.40	Neutral
2	1.81 – 2.60	Low
1	1.00 – 1.80	Very Low

Descriptive statistics, particularly the mean, were employed to summarize respondents' perceptions of inventory management practices and supply chain performance.

To examine the direct effects of Strategic Supplier Partnerships, Economic Order Quantity, Just-In-Time practices, and Material Requirements Planning on supply chain performance, multiple linear regression analysis was conducted.

2.7 Ethical Consideration

The study strictly followed the ethical standards established by De La Salle Lipa. The questionnaire clearly stated that participation was voluntary and that respondents could withdraw at any time during the survey process. It also emphasized the protection of respondents' privacy and explained that data were analyzed using aggregated responses rather than individual results.

In addition, the researcher obtained review and approval from the Research Ethics Review Committee prior to conducting the study. The online questionnaire survey complied with the Ethical Guidelines for Online Survey Design issued by the Research Management and Coordination Office.

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistics

Descriptive statistics were used to summarize the responses of the participants regarding inventory management practices and supply chain performance. The results provide an overview of how respondents perceive the implementation of inventory management practices and the supply chain performance within the organization.

Table 2. Mean Interpretation of the Variables examined in the Study

	Mean	Std. Deviation	Verbal Interpretation
Supply Chain Performance	4.098	0.781	High
Strategic Supplier Partnership	3.905	0.884	High
Economic Order Quantity	4.193	0.750	High
Just-in-Time	4.000	0.883	High
Material Resource Planning	4.093	0.645	High

Table 2 presents the descriptive statistics of the variables examined in this study, including Supply Chain Performance, Strategic Supplier Partnership, Economic Order Quantity, Just-in-Time and Material Resource Planning.

Findings revealed that the average score for Supply Chain Performance was 4.098 (SD = 0.781), suggesting that participants generally feel the organization exhibits effective supply chain performance. This implies that the existing supply chain activities are viewed as operating efficiently in terms of coordination, responsiveness, and operational effectiveness. This result aligns with the research by Aranzamendez et al. (2025), which indicated that a food manufacturing company in the Philippines showed strong supply chain management performance, reflecting effective operational practices and favorable organizational outcomes.

In the inventory management practices, Economic Order Quantity had the highest mean score ($M = 4.193$, $SD = 0.750$), suggesting that respondents strongly believe that optimal order quantity practices are applied in the organization. This suggests that the organization effectively oversees order amounts to strike a balance between ordering expenses and holding costs, thus enhancing inventory effectiveness. Likewise, Material Resource Planning indicated an average score of 4.093 ($SD = 0.645$), implying that participants concur that organized material planning is implemented. The comparatively lower standard deviation suggests

that participants share stable views about the application of MRP in the organization. With an average score of 3.999 (SD = 0.883), Just-in-Time inventory management reflects participants' agreement that the organization aims to minimize inventory by procuring materials only as needed in the production or distribution process. This strategy diminishes costs associated with inventory carrying while maintaining operational efficiency. Furthermore, the Strategic Supplier Partnership garnered an average score of 3.905 (SD = 0.884), suggesting that the organization promotes collaborative relationships with suppliers. These partnerships could involve sharing data, long-lasting collaboration, and coordination to ensure smooth supply chain operations. This result aligns with the research conducted by Adalim et al. (2025), which indicated elevated levels of inventory strategy use in food manufacturing companies, with average ratings between 3.94 and 4.22, suggesting high to very high execution of inventory management methods.

Overall, the descriptive statistics indicate that respondents perceive the organization as actively implementing inventory management practices that support supply chain performance.

3.2 Pearson Correlation

Table 3. Pearson Correlation Matrix

	SCP	SSP	EOQ	JIT	MRP
Supply Chain Performance	1.00				
Strategic Supplier Partnership	0.54	1.00			
Economic Order Quantity	0.47	0.38	1.00		
Just-in-Time	0.53	0.46	0.43	1.00	
Material Resource Planning	0.59	0.56	0.52	0.48	1.00

Pearson correlation analysis was conducted to determine the relationships between inventory management practices and supply chain performance.

Material Resource Planning showed the strongest relationship with supply chain performance ($r = 0.587$, $p < 0.001$). This suggests that effective material planning significantly contributes to improving supply chain coordination, inventory availability, and operational efficiency. Likewise, the Strategic Supplier Partnership exhibited a moderate positive correlation with supply chain performance ($r = 0.538$, $p < 0.001$). This suggests that effective collaboration with suppliers leads to enhanced coordination, punctual delivery of materials, and better supply chain results. Also, Just-in-Time inventory management showed a moderate positive correlation with supply chain performance ($r = 0.531$, $p < 0.001$). This shows that lowering inventory

levels and ensuring supply matches demand helps improve operational efficiency and the responsiveness of the supply chain. Furthermore, the Economic Order Quantity exhibited a moderate positive correlation with supply chain performance ($r = 0.472$, $p < 0.001$). This indicates that choices related to optimal order quantities can help enhance inventory management and supply chain efficiency. The results showed that all inventory management practices have positive relationships with supply chain performance, indicating that improvements in these practices are associated with enhanced supply chain performance (Khalid, 2024).

In summary, the correlation findings suggest a positive association between inventory management with supply chain performance.

3.3 Multiple Linear Regression

Table 4. Multiple Linear Regression

Model	Predictor	B	Std. Error	Beta	t-value	p-value
1	(Constant)	0.507	0.347		1.461	0.146
	Strategic Supplier Partnership	0.191	0.070	0.216	2.731	0.007
	Economic Order Quantity	0.149	0.079	0.143	1.879	0.062
	Just-In-Time	0.208	0.067	0.235	3.087	0.002
	Material Resource Planning	0.338	0.102	0.279	3.304	0.001

The coefficients table was analyzed to determine the individual effects of each variable on supply chain performance.

3.3.1 Strategic Supplier Partnership

The findings show that Strategic Supplier Partnership significantly improves Supply Chain Performance ($\beta = 0.204$, $p < 0.05$), indicating that better supply chain outcomes are a result of increased cooperation and coordination with suppliers. The results show that supply chain performance is significantly improved by strategic supplier partnerships. This implies that companies are more likely to achieve better coordination, improved information exchange, and increased operational efficiency when they build strong collaborative relationships with suppliers. This outcome is in line with Munir's (2023) study, which also discovered that improved supply chain performance is greatly enhanced by stronger supplier-manufacturer partnerships through increased communication, trust, and value creation among supply chain partners. The study, which involved 150 respondents from manufacturing and service organizations, further emphasized

that effective supplier collaboration enhances supply chain effectiveness and organizational performance.

3.3.2 Just-In-Time

Similarly, Just-In-Time practices demonstrate a significant positive effect ($\beta = 0.253$, $p < 0.05$), indicating that synchronized material deliveries and reduced inventory waste enhance operational efficiency. The study's findings show that supply chain performance is greatly impacted by Just-in-Time (JIT) practices. By coordinating production and material delivery, JIT improves operational efficiency by lowering inventory levels and operational delays. This result is in line with Ubolo et al. (2025), who found that among Nigerian manufacturing companies, there was a significant positive correlation ($r = 0.682$, $p = 0.000$) between JIT delivery and operational efficiency. According to the study's findings, a greater use of JIT techniques greatly enhances organizational performance and operational efficiency. Similar to this, Susanti et al. (2025) found that putting JIT into practice decreased procurement lead time by 40% and inventory holding costs by 25%, proving the usefulness of JIT in enhancing operational performance and production efficiency.

3.3.3 Material Resource Planning

Additionally, Material Resource Planning significantly improves Supply Chain Performance ($\beta = 0.230$, $p < 0.05$), emphasizing the significance of methodical material planning and coordination in sustaining effective supply chain operations. The findings also show that supply chain performance is greatly impacted by material resource planning. This implies that companies can guarantee the availability of the appropriate materials at the appropriate time by methodically planning their production schedules and materials, which enhances supply chain results and operational efficiency. This result is in line with research by Kamalu et al. (2023), which found that supply chain performance among fast-moving consumer goods companies is significantly correlated with material resource planning. Their study found strong positive correlations between MRP and key supply chain performance indicators such as resource utilization ($r = 0.822$, $p < 0.05$) and order-to-delivery lead time ($r = 0.806$, $p < 0.05$), demonstrating that effective material planning contributes to improved supply chain efficiency and organizational performance.

3.3.4 Economic Order Quantity

However, Economic Order Quantity (EOQ) does not have a statistically significant effect on Supply Chain Performance ($p > 0.05$), indicating that its influence becomes limited when other inventory management practices are considered in the model. While EOQ remains a widely used inventory control method, organizations may rely more on collaborative supplier relationships, demand-driven replenishment

systems, and structured material planning to improve supply chain performance. The regression results further confirm that EOQ does not have a meaningful impact on supply chain performance. This may be due to the limitations of the traditional EOQ model in modern supply chain environments. Previous studies suggest that real-world constraints—such as supplier-imposed minimum order quantities, supply disruptions, and demand variability—often prevent the full application of the EOQ model in practice. In addition, empirical evidence shows that EOQ levels can fluctuate significantly under actual operating conditions. For example, EOQ values increased by around 20–30% during peak demand periods and decreased by approximately 10–15% when demand stabilized during the COVID-19 pandemic. These variations highlight how sensitive EOQ calculations are to operational constraints and external disruptions. As a result, many organizations are shifting toward more flexible and adaptive inventory management approaches instead of relying solely on EOQ. This shift may explain why EOQ showed minimal impact on supply chain performance in this study (Alnahhal et al., 2024). This finding also supports the Resource-Based View (Barney, 1991), which emphasizes that internal capabilities such as planning and coordination are more critical to organizational performance than standardized and easily replicated tools like EOQ.

3.4 Model Summary

Table 5. Multiple Linear Regression Model Summary

Model	R	R ²	Adjusted R ²	Std. Error	ΔR ²	F Change	df1	df2	Sig. F Change
1	.688 ^a	0.473	0.457	0.576	0.473	29.848	4	133	0.000

Model 1 – Inventory Management Practices

The model assessed the impact of Strategic Supplier Partnership, Economic Order Quantity, Just-in-Time, and Material Resource Planning on supply chain performance. The results show that these variables collectively explain 47.3% of the variation in supply chain performance ($R^2 = 0.473$), indicating that inventory management practices significantly contribute to organizational supply chain outcomes. Moreover, all variables demonstrated a positive relationship with supply chain performance, implying that improvements in these practices can lead to better supply chain results (Khalid, 2024).

3.5 Conclusion

In food manufacturing firms, the efficiency of supply chain operations largely depends on how well

inventory is managed. This study contributes to the growing body of knowledge by examining how key inventory management practices Strategic Supplier Partnership (SSP), Economic Order Quantity (EOQ), Just-in-Time (JIT), and Material Requirements Planning (MRP) influence Supply Chain Performance within food manufacturing companies in Cabuyao City, Laguna. By focusing on a specific local context in the Philippines, the study provides empirical insights into how these operational practices affect supply chain outcomes.

The findings confirm that effective inventory management practices are crucial for achieving strong supply chain performance. Strategic Supplier Partnership, JIT, and MRP were found to have significant positive effects (leading to the rejection of H_01 , H_03 , and H_04), indicating that building strong supplier relationships and ensuring synchronized material planning can directly enhance operational efficiency and workflow.

In contrast, EOQ was not found to have a statistically significant effect on supply chain performance when considered alongside other practices, resulting in the acceptance of H_02 . This implies that although EOQ remains a useful tool for inventory control, organizations tend to rely more on supplier collaboration, demand-driven systems, and integrated planning approaches to improve supply chain performance in modern manufacturing settings.

Overall, the results highlight that effective inventory management remains fundamental to supply chain success.

3.6 Recommendations

Given the importance of supply chain performance in maintaining operational efficiency and competitiveness in the manufacturing sector, organizations must continuously evaluate and strengthen their inventory management practices.

3.6.1 Strategic Supplier Partnership

Based on the study's findings, manufacturing firms should strengthen their strategic supplier partnerships by implementing structured supplier management programs that are embedded in day-to-day operations. Specifically, firms may establish long-term contractual agreements with key suppliers to ensure supply stability and consistent pricing, while also clearly defining service expectations, delivery commitments, and accountability mechanisms. In selecting key suppliers, firms may prioritize those that provide critical materials or have a significant impact on production continuity.

Regular performance evaluation using KPIs such as On-Time Delivery (OTD), quality defect rates, and lead time reliability should be conducted on a monthly or quarterly basis, supported by a formal supplier

scorecard system. The results of these evaluations should not only be monitored but also used as a basis for conducting supplier performance reviews, identifying recurring issues, and implementing corrective actions through coordinated planning between the firm and its suppliers.

In addition, firms are encouraged to adopt integrated information-sharing systems (e.g., shared forecasting or inventory visibility tools) to enhance coordination and transparency. These systems may be utilized to communicate demand requirements, monitor inventory movements, and provide advance visibility of replenishment needs, thereby reducing information delays and improving responsiveness across the supply chain. This coordination may be further strengthened through collaborative approaches such as vendor-managed inventory (VMI), wherein suppliers are granted access to inventory data and participate in replenishment decisions under defined parameters. Such practices have been found to improve real-time information exchange, increase inventory visibility, and enhance overall supply chain efficiency (Chen et al., 2023).

Conducting regular supplier meetings or business reviews can further align production plans, address potential disruptions early, and support continuous improvement initiatives. During these engagements, both parties may discuss demand fluctuations, operational constraints, and improvement opportunities to ensure alignment of expectations and capabilities. Furthermore, firms may strengthen supply reliability by identifying alternative or backup suppliers for critical materials to mitigate potential risks and ensure continuity of operations.

These strategies help minimize supply uncertainties, improve material availability, and ultimately enhance overall supply chain performance.

3.6.2 *Just-in-Time*

Organizations should maintain and further strengthen the implementation of Just-in-Time (JIT) practices by establishing a pull-based replenishment system that directly links material ordering to actual production consumption. Instead of relying on fixed order quantities, firms should base replenishment decisions on real-time material usage recorded at the production or dispatch level to ensure that only the required quantity of materials is ordered.

To support this, firms should implement a structured delivery arrangement with suppliers, such as pre-agreed delivery frequencies (e.g., daily or multiple deliveries per week) and fixed delivery time windows aligned with production schedules. This ensures that materials arrive exactly when needed, reducing the need for buffer stock and minimizing storage requirements.

At the warehouse and operations level, companies should enforce strict monitoring of inventory

levels by setting reorder triggers based on minimum stock thresholds tied to short-term production requirements. Warehouse personnel should regularly track fast-moving and critical items to ensure timely replenishment and avoid production interruptions.

In addition, firms should require suppliers to commit to consistent lead times and delivery reliability, with immediate escalation procedures in place for delays or incomplete deliveries. Any deviation in delivery schedules should be addressed through rapid coordination to prevent disruption to production flow.

To further strengthen JIT execution, organizations should reduce internal process delays by minimizing handling time, eliminating unnecessary storage steps, and improving material flow from receiving to production. Continuous monitoring of material movement and replenishment cycles should be conducted to identify inefficiencies and ensure that JIT principles are consistently applied.

Through these specific operational measures, organizations can reduce excess inventory, improve material flow, and maintain a responsive and cost-efficient supply chain.

3.6.3 Material Resource Planning

Companies are encouraged to strengthen the implementation of Material Requirements Planning (MRP) systems by ensuring that material planning is directly driven by updated production schedules and accurate demand inputs. Instead of relying on static plans, firms should regularly update MRP data inputs such as demand forecasts, bill of materials (BOM), and inventory records to ensure that material requirements are computed based on current operational conditions.

At the planning level, organizations should enforce a fixed planning cycle (e.g., weekly MRP runs) where material requirements are recalculated and translated into specific purchase requisitions and production orders. Planners should review MRP outputs to validate order quantities, required dates, and material availability before execution to avoid excess ordering or material shortages.

To improve execution accuracy, warehouse and inventory personnel should ensure that inventory records in the system are regularly updated through cycle counting and real-time transaction recording. Inaccurate inventory data should be immediately corrected, as it directly affects MRP calculations and may result in incorrect replenishment decisions.

In addition, firms should align procurement activities with MRP-generated schedules by ensuring that suppliers receive timely and accurate purchase orders based on planned requirements. Any changes in production plans should be promptly reflected in the MRP system and communicated to suppliers to prevent delays or mismatches in material supply.

To further strengthen MRP effectiveness, organizations should monitor key planning exceptions such

as delayed orders, material shortages, and excess inventory, and take corrective action through schedule adjustments or order rescheduling. Continuous review of planning parameters, including lead times and safety stock settings, should also be conducted to ensure that the system remains responsive to operational changes.

Through these specific planning and execution practices, firms can achieve better synchronization between production, procurement, and inventory, resulting in improved resource utilization and more stable supply chain operations.

3.6.4 Future Researchers

Future researchers are encouraged to expand the scope of this study by exploring other factors that may influence supply chain performance, such as supply chain integration, accuracy in demand forecasting, warehouse management practices, and digital transformation initiatives. Conducting similar studies across different industries or regions may also provide deeper insights into how inventory management practices contribute to improving supply chain performance.

3.7 Limitations of the Study

While this study provides meaningful insights, several limitations should be considered.

First, the research relied on self-reported data from employees involved in inventory management and supply chain operations. This means the results may be affected by personal perceptions or possible response bias. Future studies could strengthen the findings by using objective performance metrics or actual organizational data.

Second, the scope of the study was limited to food manufacturing firms in Cabuyao City, Laguna. Although this setting is relevant, the results may not fully reflect the situation in other industries or regions. Expanding the coverage to different locations and sectors would improve the generalizability of the findings.

Third, the study used a cross-sectional design, capturing data at a single point in time. Because of this, it cannot explain how inventory management practices and supply chain performance change over time. Future research may adopt a longitudinal approach to better understand these dynamics.

Lastly, the study focused only on four inventory management practices—Strategic Supplier Partnership, Economic Order Quantity, Just-in-Time, and Material Resource. Other operational and organizational factors that may influence supply chain performance were not included. Future research could explore additional variables to provide a more comprehensive understanding of supply chain performance in manufacturing settings.

3.8 Declaration

This study was carried out in compliance with established ethical research standards and was approved by the appropriate ethics review body. All information gathered and presented was strictly used for academic purposes and managed with a high level of confidentiality to ensure the protection of participants' identities and privacy.

In the process of preparing this manuscript, the author utilized OpenAI as a supporting tool to enhance the clarity and organization of selected sentences. All suggested outputs were thoroughly reviewed, revised, and refined to maintain accuracy, coherence, and alignment with academic writing standards. However, the core content of the study including the analysis, interpretation of findings, and conclusions was independently developed by the author.

The author confirms that this work is original and that all references and sources have been properly acknowledged and cited in accordance with ethical research and publication guidelines.

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