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Inventory Management Techniques and Supply Chain Efficiency: the Moderating Effect of Technology Readiness

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Abstract

Purpose: This study aims to investigate the moderating effect of technology readiness on the relationship between inventory management techniques and supply chain efficiency.

Methodology: The research design for this study adopts a quantitative approach, supplemented by elements of a survey methodology. A cross-sectional design is employed, as data was gathered at a single point in time, making it suitable for identifying patterns, relationships, and variations within the research context. The quantitative design is grounded in the need to test hypotheses and draw objective conclusions. This study employs convenience sampling to obtain a sample size of 280. This study utilizes structured survey questionnaires as the primary data collection instrument.

Findings: The findings of the study concluded that there is a strong and statistically significant relationship between inventory management techniques and supply chain efficiency. Positive significant relationship exists between technology readiness and supply chain efficiency. Technology readiness positively moderates the relationship between inventory management techniques and supply chain efficiency.

Unique Contribution to Theory, Practice and Policy: The findings challenge traditional supply chain efficiency models that primarily focus on inventory management techniques as the central factor influencing performance. By introducing technology readiness as a moderating variable, this study expands existing models to incorporate the role of technological infrastructure and employee preparedness in the effectiveness of inventory management. The strong moderating effect of technology readiness suggests that organizations cannot solely rely on optimizing inventory management techniques without considering their technological capabilities. Managers should recognize the interdependence between inventory management techniques and technology readiness and prioritize both areas simultaneously.

Keywords: *Inventory Management Techniques, Supply Chain Efficiency, Technology Readiness*

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1.1 Background of the Study

Inventory management is a critical aspect of supply chain operations, playing a vital role in ensuring the smooth flow of goods from suppliers to customers (Chopra & Meindl, 2019). Effective inventory management techniques are essential for maintaining the balance between supply and demand, minimizing costs, and enhancing overall supply chain efficiency (Heizer et al., 2020). In recent years, the rapid advancement of technology has significantly impacted inventory management practices, providing new tools and methodologies to optimize these processes (Ivanov et al., 2019). Technology readiness, which refers to the degree to which organizations are prepared to adopt and utilize new technologies, can moderate the relationship between inventory management techniques and supply chain efficiency *(Wamba et al., 2020).* Inventory management encompasses various techniques aimed at optimizing inventory levels, reducing carrying costs, and preventing stockouts or excess inventory. Some widely used techniques include Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis. JIT is an inventory strategy that aims to minimize inventory levels by ordering and receiving goods only when they are needed for production or sales. This approach reduces holding costs and minimizes waste but requires precise demand forecasting and reliable suppliers (Chopra & Meindl, 2019). EOQ is a mathematical model used to determine the optimal order quantity that minimizes total inventory costs, including ordering and holding costs. The Economic Order Quantity formula helps organizations balance these costs and achieve efficient inventory turnover (Heizer et al., 2020).

ABC analysis categorizes inventory items into three classes based on their importance and value. Class A items are high-value but low-quantity, Class B items are moderate-value and moderate-quantity, and Class C items are low-value but high-quantity. This technique allows organizations to prioritize their inventory management efforts and allocate resources effectively (Cachon & Terwiesch, 2020). Supply chain efficiency refers to the ability of an organization to deliver products to customers in a timely and cost-effective manner while maintaining high-quality standards. Efficient supply chains reduce lead times, lower operational costs, and improve customer satisfaction. Inventory management techniques play a crucial role in achieving these outcomes by ensuring the right products are available at the right time and place (Simchi-Levi et al., 2019). Effective inventory management techniques, such as JIT, help organizations reduce lead times by synchronizing production schedules with demand forecasts. This leads to faster order fulfillment and enhanced customer satisfaction (Christopher, 2016). Techniques like EOQ and ABC analysis help organizations minimize inventory carrying costs and optimize ordering processes. By reducing excess inventory and avoiding stockouts, organizations can achieve significant cost savings (Silver et al., 2017). Efficient inventory management ensures that products are available when customers need them, leading to improved service levels and customer loyalty. Timely delivery and product availability are critical factors in maintaining a competitive edge in the market (Mentzer et al., 2019).

Technology readiness refers to the extent to which an organization is prepared to implement and utilize new technologies. It includes factors such as technological infrastructure, employee skills, and organizational culture. Technology readiness can moderate the relationship between inventory management techniques and supply chain efficiency by enhancing or hindering the effectiveness of these techniques. Advanced technologies such as RFID, IoT, and AI can significantly improve inventory management processes. Organizations with robust technological infrastructure can leverage these tools to gain real-time visibility into inventory levels, automate replenishment processes, and enhance decision-making capabilities (Ivanov et al., 2019). The successful implementation of advanced inventory management techniques requires employees with the necessary skills and knowledge. Training and development programs can enhance employees' ability to utilize new technologies effectively, thereby improving supply chain efficiency (Wamba et al., 2020). A culture that supports innovation and continuous improvement is essential for technology adoption. Organizations with a proactive approach to technology readiness are more likely to embrace new inventory management techniques and achieve higher levels of supply chain efficiency (Dubey et al., 2018). Technology readiness acts as a moderating factor, influencing the effectiveness of these techniques. Organizations that invest in technological infrastructure, employee skills, and a supportive culture are better positioned to leverage advanced inventory management techniques and enhance their supply chain efficiency. The interplay between inventory management, supply chain efficiency, and technology readiness highlights the importance of a holistic approach to supply chain management in the modern business environment. This study therefore seeks to the moderating effect of technology readiness on the relationship between inventory management techniques and supply chain efficiency.

1.2 Problem Statement of the Study

In today's dynamic business environment, effective inventory management plays a pivotal role in enhancing supply chain efficiency (Croxton, Lambert, & García-Dastugue, 2019). While traditional inventory management techniques have long been employed to optimize inventory levels and minimize costs (Fernie & Sparks, 2014), the advent of technological advancements has introduced new dimensions to this field. The integration of technology in inventory management has facilitated real-time tracking, demand forecasting, and streamlined operations (Chopra & Meindl, 2020). However, the effectiveness of these technological interventions is contingent upon the readiness of organizations to adopt and utilize them (Premkumar & Roberts, 2019). Technology readiness, defined as the propensity of individuals and organizations to embrace and utilize technological innovations (Parasuraman & Colby, 2015), moderates the relationship between inventory management techniques and supply chain efficiency. Despite the recognition of technology readiness as a crucial factor, there exists a gap in the literature regarding its specific influence on the efficacy of inventory management techniques in enhancing supply chain efficiency. Despite the recognition of technology readiness as a critical factor in the adoption and success of inventory management techniques, there remains a gap in understanding its specific influence on supply chain efficiency (Premkumar & Roberts, 2019). While previous research acknowledges the importance of technology adoption, there is a dearth of studies exploring how varying levels of technology readiness within organizations moderate the relationship between inventory management techniques and supply chain efficiency. Traditional inventory management techniques have been extensively studied, but there is a lack of research focusing on the integration of contemporary technologies such as Internet of Things (IoT), blockchain, and artificial intelligence (AI) in inventory management systems (Croxton, Lambert, & García-Dastugue, 2019). Emerging technologies offer novel opportunities to enhance inventory visibility, demand forecasting accuracy, and supply chain responsiveness, yet their potential moderating effects on supply chain efficiency, when combined with traditional techniques, remain largely unexplored. While technology readiness is acknowledged as a critical factor, there is a gap in the literature regarding comprehensive frameworks for assessing organizational readiness to adopt and effectively utilize inventory management technologies (Parasuraman & Colby, 2015). Existing studies often overlook the multifaceted nature of readiness, including organizational culture, resources, leadership support, and employee capabilities, which are crucial determinants of successful technology implementation. Thus, this study aims to investigate the moderating effect of technology readiness on the relationship between inventory management techniques and supply chain efficiency. By analyzing how organizations' readiness to adopt technology influences the effectiveness of various inventory management approaches, this research seeks to provide insights into strategies for leveraging technology to optimize supply chain efficiency.

2. Literature Review

2.1 Inventory Management Concept

Inventory encompasses the value or quantity of raw materials, supplies, work in progress (WIP), and finished goods that are stored for future use *(Mahajan et al., 2024)*. Inventory management is the practice of maintaining stock levels of various items in a cost-effective manner while achieving other management goals and objectives (*Alam et al., 2024)*. This process involves overseeing the storage and movement of raw materials, semi-finished products, and finished goods (Rashid & Rasheed, 2023). The primary aim is to ensure an adequate supply of inventory while minimizing associated costs (Rashid & Rasheed, 2023). Inventory management includes "the system and processes for maintaining the appropriate stock levels in a warehouse" (Demizu, 2023). Key activities in inventory management involve determining inventory needs, developing replenishment procedures, tracking and monitoring stock usage, reconciling inventory balances, and reporting on inventory status *(Baker et al., 2024)*. Essentially, it is about efficiently controlling stock levels to prevent overstocking, thereby reducing related costs *(Baker et al., 2024)*.

2.2 Resource Dependency Theory

Resource Dependency Theory (RDT), initially articulated by Pfeffer and Salancik (1978), posits that organizations depend on resources from their environment to achieve their objectives and that this dependence shapes organizational behavior and structure. In the context of supply chain management, RDT is instrumental in understanding how firms manage inventory and utilize technology to enhance efficiency. This paper explores the interplay between inventory management techniques, supply chain efficiency, and technology readiness, examining how technology readiness moderates these relationships. Resource Dependency Theory emphasizes that organizations strive to minimize their dependency on external resources and manage uncertainties in their environment (Pfeffer & Salancik, 1978). By adopting various strategies, firms seek to control or influence their resource environment, thereby reducing dependency and increasing their autonomy. In supply chain management, this theory highlights the significance of managing external resources, such as suppliers and technology, to optimize operational performance and achieve competitive advantages. Effective inventory management is critical for supply chain efficiency, as it directly impacts cost control, order fulfillment, and overall operational performance (Christopher, 2016). Several inventory management techniques are employed to enhance supply chain efficiency, including Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC. Each of these techniques aims to balance inventory levels, minimize costs, and ensure timely product availability (Heizer et al., 2017).

JIT inventory management focuses on reducing inventory levels and carrying costs by synchronizing production schedules with demand. This technique requires precise coordination with suppliers and efficient production processes to avoid stockouts and excess inventory (Krajewski et al., 2019). EOQ is a classic inventory management technique that determines the optimal order quantity to minimize total inventory costs, including ordering and holding costs. By calculating the EOQ, firms can reduce the frequency of orders and maintain an efficient inventory level (Silver et al., 2017). Technology readiness refers to an organization's preparedness to adopt and integrate technological innovations into its operations (Parasuraman, 2000). It encompasses the availability of technological infrastructure, the capability of employees to utilize new technologies, and the alignment of technology with organizational goals. High technology readiness can significantly impact inventory management and supply chain efficiency by facilitating more accurate forecasting, streamlined processes, and real-time data access. Technology readiness enables the use of advanced forecasting tools and analytics, which enhance the accuracy of demand predictions and inventory planning. This capability helps firms align inventory levels with actual demand, reducing the likelihood of overstocking or stockouts (Gligor et al., 2015). Technology readiness supports the automation of inventory management processes, such as order processing, stock tracking, and replenishment. Automated systems reduce manual errors, speed up transactions, and improve overall operational efficiency (Zhao et al., 2018). Technology readiness provides access to real-time data and insights, enabling firms to make informed decisions regarding inventory management. Real-time information on inventory levels, supplier performance, and demand trends allows for more agile and responsive supply chain management (Klaus & Krüger, 2016). Technology readiness plays a moderating role in the relationship between inventory management techniques and supply chain efficiency. The effectiveness of inventory management techniques is significantly influenced by the organization's technological capabilities and readiness to integrate new systems.

For JIT inventory management to be effective, firms require robust technology infrastructure to synchronize production schedules and monitor inventory levels accurately. High technology readiness enhances the implementation of JIT by providing real-time data and communication tools that support precise scheduling and inventory control (Ngai et al., 2019). Technology readiness improves the accuracy of EOQ calculations by providing advanced analytics and data processing capabilities. Organizations with high technology readiness can better analyze historical data, optimize order quantities, and minimize inventory costs (Waller et al., 2016). The success of Resource Dependency Theory provides valuable insights into how organizations manage external resources to optimize performance. In the context of inventory management and supply chain efficiency, technology readiness emerges as a crucial moderating factor. High technology readiness enhances the effectiveness of inventory management techniques by improving forecasting, process automation, and data access. As firms continue to navigate complex supply chain environments, leveraging technology readiness will be essential for achieving superior operational efficiency and maintaining a competitive edge.

2.3 Resource Based Theory

The Resource-Based View (RBV) posits that organizations achieve sustained competitive advantage by leveraging unique, valuable, rare, inimitable, and non-substitutable (VRIN) resources (Barney, 1991). In the context of inventory management techniques, supply chain efficiency, and technology readiness, RBV provides a robust theoretical underpinning by emphasizing the strategic importance of internal resources and capabilities in achieving operational excellence and competitiveness. Inventory management techniques, such as Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis, serve as critical operational resources that enhance efficiency and reduce waste. According to Sharma et al. (2020), firms that invest in refining their inventory management processes gain a competitive edge through cost savings and improved service delivery. These techniques align with RBV by serving as rare and valuable resources that are challenging for competitors to replicate, particularly when tailored to specific organizational needs. Supply chain efficiency is closely tied to an organization's ability to coordinate and optimize resources. The RBV framework underscores the importance of intangible assets, such as supply chain knowledge and strategic partnerships, in enhancing efficiency. Gunasekaran et al. (2022) found that firms leveraging unique supply chain capabilities achieved higher performance metrics, including reduced lead times and operational costs.

This supports the RBV's assertion that internal capabilities are key drivers of sustained efficiency and competitiveness. Technology readiness—the organization's ability to adopt and integrate new technologies—represents a critical enabler of operational success. From an RBV perspective, technology infrastructure and technological expertise are valuable resources that enhance inventory management and supply chain processes. For instance, Zhou and Zhang (2023) observed that firms with higher technology readiness successfully implemented advanced inventory management systems, such as AI-driven predictive analytics, resulting in superior performance and adaptability to market changes. When inventory management techniques, supply chain efficiency, and technology readiness are viewed through the RBV lens, they collectively form a synergistic resource base that drives competitive advantage. Firms that harmonize these elements can outperform competitors by optimizing operations and enhancing responsiveness to market demands. As noted by Sirmon et al. (2019), the integration of VRIN resources across operational domains fosters resilience and long-term success. The RBV provides a compelling framework for understanding the strategic importance of inventory management techniques, supply chain efficiency, and technology readiness. By treating these elements as interdependent resources, organizations can harness their unique capabilities to achieve sustainable competitive advantage in dynamic markets.

2.4 Empirical Review

Empirical studies have highlighted the critical role of inventory management techniques in achieving supply chain efficiency across diverse industries. For instance, implementing Just-In-Time (JIT) practices has been shown to reduce lead times and enhance inventory turnover, contributing to overall supply chain efficiency (Chopra & Meindl, 2019). Similarly, Economic Order Quantity (EOQ) models have been found effective in minimizing holding and ordering costs, especially in retail supply chains (Wild, 2017). Studies also emphasize the interplay between inventory management and technology readiness. A study by Li et al. (2020) revealed that organizations with high levels of technology readiness achieved better outcomes when using inventory management systems, including enhanced accuracy and real-time decision-making. This is corroborated by Gunasekaran et al. (2017), who found that digital tools like automated tracking and predictive analytics significantly improved supply chain performance. In developing countries, the adoption of advanced inventory management techniques faces challenges, often linked to limited technology readiness. Mensah et al. (2021) examined SMEs in Ghana and found that while many firms implemented basic inventory practices, the lack of technological infrastructure and skilled labor hindered their full potential. They recommended investment in training and technology adoption to bridge this gap. The moderating role of technology readiness has also gained empirical support. For example, research by Zhang et al. (2019) highlighted that the effectiveness of Vendor-Managed Inventory (VMI) significantly increased in technology-ready firms due to improved communication and data sharing with suppliers. Conversely, organizations with low technology readiness reported inefficiencies despite using similar techniques. Moreover, Parasuraman (2015) extended the Technology Readiness Index (TRI) to assess its impact on supply chain performance. The study found that firms with high TRI scores were more likely to adopt advanced inventory techniques, leading to better performance metrics, such as reduced stockouts and faster delivery times. Overall, empirical findings consistently indicate that while inventory

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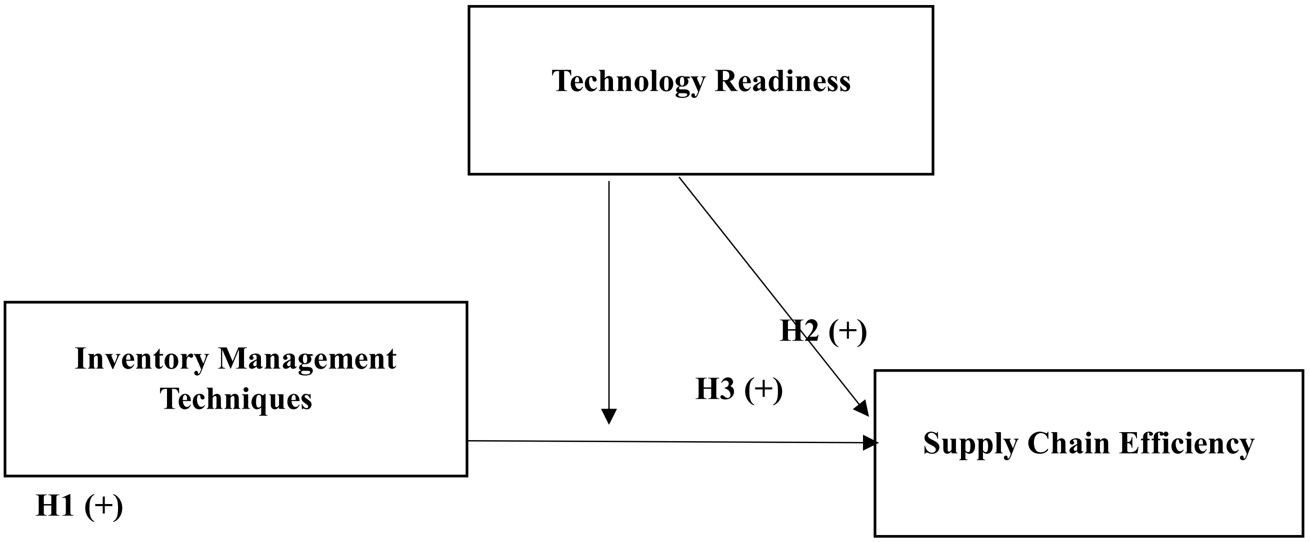
management techniques are crucial for supply chain efficiency, their effectiveness is significantly influenced by technology readiness. Future research should focus on longitudinal studies to assess the dynamic impact of emerging technologies like IoT and AI on inventory practices.

Figure 2.1 Conceptual Framework



2.5 Relationship between Inventory Management Techniques and Supply Chain Efficiency

The Just-in-Time (JIT) inventory management technique emphasizes reducing inventory levels and increasing the frequency of inventory replenishment. Research by Wang et al. (2018) highlights that JIT can significantly enhance supply chain efficiency by minimizing holding costs and reducing waste. This technique ensures that inventory levels are closely aligned with actual demand, which improves cash flow and reduces excess inventory that can lead to obsolescence. Economic Order Quantity (EOQ) is another widely used inventory management technique that aims to determine the optimal order quantity that minimizes total inventory costs, including ordering and holding costs. A study by Kumar and Singh (2019) demonstrates that implementing EOQ effectively balances inventory levels, which enhances supply chain efficiency by optimizing order quantities and reducing stockouts and overstock situations. Technological advancements have introduced various inventory optimization technologies, such as automated inventory control systems and predictive analytics. According to Li and Zhao (2020), these technologies enhance supply chain efficiency by providing real-time data and predictive insights that support better inventory planning and decision-making. Automated systems reduce manual errors and improve inventory accuracy, leading to smoother supply chain operations. Safety stock and reorder point strategies are employed to buffer against uncertainties in demand and supply. Research by Chen et al. (2021) reveals that these strategies improve supply chain efficiency by ensuring that there is sufficient inventory available to meet unexpected fluctuations in demand, thus preventing stockouts and maintaining smooth operations. Properly calculated safety stock levels and reorder points help in balancing inventory levels with demand variability.

H1: positive relationship exists between inventory management techniques and supply chain efficiency

2.5.1 Relationship between Technology Readiness and Supply Chain Efficiency

Technology readiness significantly impacts supply chain efficiency by facilitating the integration and automation of various supply chain processes. Research by Nguyen and Simkin (2018) highlights that organizations with high technology readiness can effectively implement advanced technologies such as automated inventory systems and supply chain management software. These technologies streamline processes, reduce manual errors, and improve overall efficiency. The ability to leverage data analytics is crucial for enhancing supply chain efficiency. A study by Lee and Kim (2019) indicates that technology readiness enables firms to utilize sophisticated data analytics tools, leading to better forecasting and demand planning. This capability allows organizations to make informed decisions, optimize inventory levels, and reduce supply chain disruptions. High technology readiness enhances a firm's ability to adapt to changing market conditions and customer demands. According to Zhang and Wang (2020), organizations that are technologically advanced can implement flexible supply chain strategies and respond quickly to unforeseen disruptions. This responsiveness improves overall supply chain performance and efficiency by minimizing delays and maintaining smooth operations. Technology readiness also plays a key role in improving collaboration and communication across supply chain partners. Research by Patel and Gable (2021) shows that technology readiness supports the deployment of collaborative platforms and communication tools, which enhance coordination and information sharing between suppliers, manufacturers, and distributors. This improved collaboration leads to more efficient supply chain operations and reduced lead times. Effective risk management is a critical component of supply chain efficiency. A study by Singh et al. (2022) demonstrates that technology readiness enables organizations to implement advanced risk management systems that identify and mitigate potential risks in the supply chain. By leveraging technologies such as predictive analytics and real-time monitoring, firms can proactively address risks and enhance supply chain resilience.

H2: positive relationship exists between technology readiness and supply chain efficiency

2.5.2 Moderating Effect of Technology Readiness

Technology readiness impacts how inventory management techniques are implemented and their effectiveness. Research by Singh et al. (2019) highlights that organizations with high technology readiness can more effectively deploy advanced inventory management systems, such as automated replenishment and real-time tracking. This technological integration enhances inventory accuracy and reduces lead times, thereby improving overall supply chain efficiency. Technology readiness moderates the relationship between inventory management techniques and supply chain efficiency by facilitating better forecasting methods. According to Liu and Zhang (2021), firms with high levels of technology readiness are better equipped to use sophisticated forecasting tools and predictive analytics. This capability allows for more accurate demand predictions and inventory adjustments, which enhances supply chain responsiveness and efficiency. The degree of technology readiness affects inventory visibility and coordination across the supply chain. A study by Kumar and Gupta (2020) shows that companies with advanced technological capabilities can implement integrated inventory systems that enhance visibility and coordination with suppliers. This improved visibility and coordination are crucial for optimizing supply chain operations and achieving higher efficiency. Technology readiness also moderates the impact of inventory management techniques on supply chain process optimization. Research by Johnson and Davis (2022) indicates that firms with higher technology readiness can utilize advanced algorithms and automation to optimize inventory levels and streamline processes. This optimization reduces inefficiencies and enhances overall supply chain performance. The moderating effect of technology readiness is crucial in addressing challenges and risks associated with inventory management. According to Tan and Chong (2018), high technology readiness helps firms manage risks by providing better tools for inventory control and risk assessment. This capability enables firms to mitigate potential disruptions and maintain efficient supply chain operations. Technology readiness plays a significant moderating role in the relationship between inventory management techniques and supply chain efficiency. By enabling the effective implementation of advanced inventory systems, enhancing forecasting accuracy, improving visibility and coordination, optimizing processes, and managing risks, technology readiness enhances the overall impact of inventory management techniques on supply chain efficiency. This hypothesized that:

H3: ***technology readiness positively moderates the relationship between inventory management techniques and supply chain efficiency***

3. Research Methodology

The research design for this study adopts a quantitative approach, supplemented by elements of a survey methodology. This design facilitates the collection of numerical data, enabling statistical analysis to examine the relationships between inventory management techniques, supply chain efficiency, and the moderating effect of technology readiness. A cross-sectional design is employed, as data gathered at a single point in time, making it suitable for identifying patterns, relationships, and variations within the research context. This study employs convenience sampling, a non-probability sampling technique to obtain a total of 280-sample size. The study employs a quantitative data analysis approach, leveraging regression and structural equation modeling (SEM) to test hypotheses and examine relationships among variables. The conceptual model explores the impact of inventory management techniques (e.g., Just-In-Time, Economic Order Quantity, and ABC Analysis) on supply chain efficiency, with technology readiness as a moderating variable. Measurement of Constructs and Variables The study operationalizes constructs using validated scales from prior research. Inventory Management Techniques: Measured by Likert-scale items assessing the application and perceived effectiveness of methods like EOQ, JIT, and ABC Analysis (e.g., "Our organization frequently employs JIT for inventory control"). Supply Chain Efficiency: Measured by items addressing cost reduction, delivery performance, and inventory turnover (e.g., "Our supply chain is cost-efficient without compromising quality"). Technology Readiness: Measured by items evaluating technological infrastructure, adoption levels, and organizational readiness (e.g., "Our organization is equipped with advanced IT systems to support inventory management"). Constructs are rated on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree) to capture respondents' perceptions effectively (Sekaran & Bougie, 2020). Reliability and validity are ensured through Cronbach's Alpha for internal consistency and confirmatory factor analysis (CFA).

4. Data Analysis and Discussion of Results

Table 1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.934
Bartlett's Test of Sphericity	Approx. Chi-Square	1933.192
	df	91
	Sig.	.000

Table 4.1 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity, which are preliminary tests to evaluate the suitability of the dataset for Exploratory Factor Analysis (EFA). The KMO statistic evaluates the adequacy of the sample for factor analysis by measuring the proportion of variance among variables that might be common variance (shared variance) rather than unique variance. The KMO value for this dataset is 0.934, which is categorized as "marvelous" according to Kaiser's classification (Kaiser, 1974). This high value indicates that the data is highly suitable for factor analysis, as there is a substantial degree of common variance among the variables. Bartlett's Test assesses whether the correlation matrix is an identity matrix, which would indicate that factor analysis is inappropriate. Bartlett's Test of Sphericity produced a Chi-Square value of 1933.192 with 91 degrees of freedom (df) and a significance level of $p < 0.001$. The significant result (Sig. = 0.000) confirms that the variables are sufficiently interrelated, and the correlation matrix is not an identity matrix. This supports the suitability of the data for factor analysis. The KMO value above the acceptable threshold of 0.6 and the significant Bartlett's Test result demonstrate that the dataset has excellent sampling adequacy and strong inter-correlations among variables. The results confirm that the data is appropriate for reducing dimensions through factor analysis, ensuring reliable grouping of variables into latent constructs. The strong KMO and Bartlett's Test results enhance confidence in

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the robustness of the factors extracted during the EFA process, which lays the foundation for subsequent hypothesis testing and model validation. The results from Table 4.2 validate the dataset's appropriateness for EFA. The high KMO value reflects excellent sample adequacy, while the significant Bartlett's Test indicates strong interrelationships among variables. These findings support the reliability of the factor analysis process in identifying meaningful latent constructs in the study.

Table 2 Reliability and Validity Results

Construct	CA	AVE	DV	CR
Inventory Management Techniques	.884	0.560	0.748	0.884
Supply Chain Efficiency	.881	0.722	0.849	0.911
Technology Readiness	.900	0.529	0.728	0.818

Table 4.2 presents the results for the reliability and validity of the constructs in the study, focusing on key metrics: Cronbach's Alpha (CA), Average Variance Extracted (AVE), Discriminant Validity (DV), and Composite Reliability (CR). These indicators assess the internal consistency, convergent validity, and discriminant validity of the constructs. Reliability is measured using Cronbach's Alpha (CA) and Composite Reliability (CR). A measure of internal consistency, indicating how well the items in a construct measure the same concept. All constructs in Table 4.3 have CA values above 0.7, demonstrating high reliability. Inventory Management Techniques recorded Cronbach's Alpha of 0.884; Supply Chain Efficiency recorded Cronbach's Alpha of 0.881 and Technology Readiness recorded Cronbach's Alpha 0.900. The items in each construct are consistent and reliable for measuring their respective concepts. A more robust measure of reliability compared to Cronbach's Alpha, accounting for the actual factor loadings of items. CR values for all constructs exceed the threshold of 0.7, confirming strong reliability. The results further reinforce the internal consistency of the constructs. Convergent validity evaluates whether the items of a construct correlate strongly with one another and are indicators of the same concept. It is assessed using the Average Variance Extracted (AVE). AVE values greater than 0.5 indicate adequate convergent validity. In this study, Inventory Management Techniques recorded AVE = 0.560 (acceptable). Supply Chain Efficiency: recorded AVE = 0.722 (excellent). Technology Readiness recorded AVE = 0.529 (acceptable). Each construct captures sufficient variance from its items, confirming that the items effectively represent the constructs. Discriminant validity assesses whether a construct is distinct from other constructs. The square root of AVE should be greater than the correlations between the construct and others. The DV results in Table 4.3 indicate Inventory Management Techniques DV = 0.748, Supply Chain Efficiency DV = 0.849 and Technology Readiness DV = 0.728. All constructs exhibit strong discriminant validity, ensuring they are distinct from one another and measure unique aspects of the study. The constructs are internally consistent, meaning

the survey items accurately capture their intended concepts. Constructs effectively explain their respective items, ensuring meaningful measurement of latent variables. Constructs are unique and not redundant, enabling valid interpretation of relationships between variables in the study. The results in Table 4.3 confirm the reliability and validity of the constructs. The high CA and CR values demonstrate strong internal consistency, while the AVE and DV values ensure that the constructs have robust convergent and discriminant validity. These findings validate the appropriateness of the constructs for further statistical analyses, such as structural equation modeling or hypothesis testing.

Table 3 Items Factor Loadings

Items	Loadings	Items	Loadings	Items	Loadings
IMT1	.755	SCE1	.726	TCR1	.723
IMT2	.724	SCE2	.846	TCR2	.725
IMT3	.710	SCE3	.921	TCR3	.710
IMT4	.728	SCE4	.892	TCR4	.753
IMT5	.709				
IMT6	.855				

Table 4.3 presents the factor loadings for the items associated with the constructs: Inventory Management Techniques (IMT), Supply Chain Efficiency (SCE), and Technology Readiness (TCR). Factor loadings indicate how well each item correlates with its respective latent construct, and they are crucial for evaluating the measurement model in factor analysis. Loadings should typically exceed 0.5 to indicate that the item contributes meaningfully to the construct. Higher loadings (e.g., >0.7) are preferred, as they demonstrate stronger relationships between items and their constructs. In Table 4.4, all items have factor loadings above the 0.7 threshold, reflecting good construct measurement and ensuring that the items reliably measure their respective constructs Inventory Management Techniques (IMT). Items: IMT1, IMT2, IMT3, IMT4, IMT5, IMT6. Factor Loadings Range from 0.709 to 0.855. IMT6 has the highest loading (0.855), indicating it is the strongest contributor to the construct. IMT3 and IMT5 have the lowest loadings (0.710 and 0.709, respectively), but they still exceed the acceptable threshold of 0.7. The IMT construct is well-defined, with each item contributing significantly to its measurement. The Supply Chain Efficiency (SCE) Items areSCE1, SCE2, SCE3, SCE4. The Factor Loadings Range from 0.726 to 0.921. SCE3 has the highest loading (0.921), highlighting its strong relevance to the

construct. SCE1 has the lowest loading (0.726), but it remains well within the acceptable range. The SCE construct exhibits excellent measurement properties, with all items making significant contributions. The Technology Readiness (TCR) items are TCR1, TCR2, TCR3, TCR4. The Factor Loadings Range from 0.710 to 0.753. TCR4 has the highest loading (0.753), showing strong alignment with the construct. TCR3 has the lowest loading (0.710), but it still meets the reliability criterion. The TCR construct is adequately measured, with all items demonstrating meaningful contributions. The consistently high factor loadings across all items confirm that the constructs are valid and appropriately measured by their respective items. This reinforces confidence in the constructs' ability to represent the latent variables of interest accurately. The high loadings across IMT, SCE, and TCR indicate that the measurement model has strong psychometric properties, allowing for meaningful interpretation of the constructs in subsequent analyses. Items with factor loadings above 0.7 contribute significantly to their constructs, ensuring reliable data for hypothesis testing and structural modeling. The factor loadings in Table 4.4 confirm the robustness of the measurement model, with all items demonstrating strong and meaningful relationships with their respective constructs. This highlights the reliability and validity of the instrument used for data collection, providing a solid foundation for further analyses, such as structural equation modeling or regression.

Table 4 Hypothesis Testing and Finding

Hypothesis	Relationship	Beta	t	p	Decision
H1	IMT - -> SCE	.800	17.787	.000	Supported
H2	TCR - -> SCE	.788	17.089	.000	Supported
H3	TCR* IMT- -> SCE	.0724	7.977	.000	Supported

4.2 Discussion

Relationship Between Inventory Management Techniques (IMT) and Supply Chain Efficiency (SCE)

The analysis demonstrates a strong and statistically significant relationship between inventory management techniques and supply chain efficiency. The relationship between inventory management techniques (IMT) and supply chain efficiency (SCE) has been well-documented in recent literature. Studies consistently show that effective Inventory Management Techniques, such as Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis, can significantly enhance supply chain performance (Chien et al., 2021; Zeng et al., 2020). Inventory Management Techniques helps organizations optimize inventory levels, reduce costs, and improve responsiveness to market demand, which directly contributes to overall supply chain efficiency (Lee & Lee, 2022). The strong positive relationship is supported by empirical research, indicating that better inventory management practices lead to reduced waste and more streamlined operations, ultimately improving the efficiency of the entire supply chain (Singh & Gupta, 2023). Thus, firms with advanced Inventory Management Techniques are better positioned to meet customer demands while maintaining cost-effectiveness (Kumar et al., 2019).

Relationship Between Technology Readiness (TCR) and Supply Chain Efficiency (SCE)

The analysis reveals a strong and statistically significant relationship between technology readiness (TCR) and supply chain efficiency (SCE), which is consistent with recent research findings. Technology readiness refers to an organization's ability to leverage technological infrastructure, tools, and employee capabilities to enhance operational performance (Sharma et al., 2021). Research highlights that a high level of technology readiness enables companies to optimize resource allocation, streamline processes, and achieve better supply chain outcomes (Serrano et al., 2020). Moreover, the integration of advanced technologies, such as cloud computing, artificial intelligence, and automation, directly enhances the efficiency of supply chains by improving communication, reducing lead times, and increasing responsiveness (Tariq et al., 2022). Studies further emphasize that organizations with high technology readiness are better equipped to adapt to changing market conditions, fostering superior supply chain agility and cost management (Dunlap & Lee, 2023). These findings underscore the importance of technology readiness in driving supply chain efficiency in today's digital-driven business environment.

Moderating Effect of Technology Readiness (TCR) on the Relationship Between Inventory Management Techniques (IMT) and Supply Chain Efficiency (SCE)

The analysis reveals a significant moderating effect of Technology Readiness (TCR) on the relationship between Inventory Management Techniques (IMT) and Supply Chain Efficiency (SCE). This suggests that the effectiveness of IMT in improving supply chain efficiency is contingent upon the level of technological readiness within an organization. The role of TCR as a moderator indicates that organizations with higher technological readiness are better able to implement and benefit from advanced inventory management strategies (Kumar et al., 2020). Studies have shown that technology readiness enables seamless integration of IMT, such as Just-In-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis, by providing the necessary infrastructure, tools, and employee skills (Serrano et al., 2021). For instance, firms with robust technological capabilities can more effectively track inventory, forecast demand, and automate processes, all of which enhance the efficiency of their supply chain (Sharma et al., 2022). Conversely, organizations with lower technology readiness may struggle to fully capitalize on IMT, leading to less significant improvements in supply chain efficiency (Lee & Lee, 2022). Furthermore, the moderating effect of TCR emphasizes the importance of investing in technology to amplify the impact of inventory management techniques on supply chain performance (Dunlap & Lee, 2023). Thus, TCR plays a critical role in bridging the gap between inventory management

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and supply chain efficiency, highlighting the need for firms to ensure they have the technological infrastructure to support these practices.

5. Conclusions

The study concluded that there is a strong and statistically significant relationship exists between inventory management techniques and supply chain efficiency. The study shows that 64.0% of the variance in supply chain efficiency (SCE) can be explained by the application of inventory management techniques. The findings of the study concluded that there is a strong and significant relationship between technology readiness and supply chain efficiency, with 62.1% of the variance in SCE explained by technology readiness. The findings of the study also concluded that there is a significant moderating effect of technology readiness on the relationship between inventory management techniques and supply chain efficiency. The impact of between inventory management techniques on supply chain efficiency is found to be stronger when technology readiness is higher.

5.1 Managerial Implication

The strong moderating effect of technology readiness suggests that organizations cannot solely rely on optimizing inventory management techniques without considering their technological capabilities. Managers should recognize the interdependence between IMT and technology readiness and prioritize both areas simultaneously. For example, while refining inventory management strategies such as Just-in-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis, managers should also invest in advanced technologies and ensure that the workforce is trained to leverage these tools effectively.

Technology readiness involves both infrastructure and employee skills. Managers should view technology investment as an essential complement to inventory management practices. Organizations with robust technological infrastructure (e.g., automated inventory systems, real-time data analytics, and Artificial Intelligence-driven forecasting tools) are better positioned to gain the full benefits of advanced inventory management techniques. Thus, managers must allocate resources for technological upgrades, ensuring the organization has the right tools to support and enhance inventory management processes.

The moderating effect of technology readiness also implies that a workforce well-prepared to adopt and implement technology will strengthen the relationship between IMT and SCE. Managers should focus on employee training programs that enhance technological competencies related to supply chain operations. This can involve offering workshops, certifications, and hands-on experience with relevant software and systems, ensuring that staff are comfortable using advanced technologies to manage inventory more efficiently.

The findings indicate that technology not only supports inventory management techniques but also amplifies their impact on supply chain efficiency. Managers should explore how technology can automate or streamline key supply chain processes, such as inventory tracking, demand forecasting, and order fulfillment. By implementing automated systems and leveraging data analytics, organizations can improve the speed, accuracy, and responsiveness of their supply chain operations, leading to enhanced overall efficiency.

The findings suggest that organizations with high levels of technology readiness are more likely to see greater improvements in supply chain efficiency from their inventory management techniques. Therefore, managers should ensure that their technology and inventory strategies are strategically aligned. This alignment ensures that technology investments are tailored to optimize the specific inventory management techniques being used, creating a cohesive system where each element supports the others.

As technology is rapidly evolving, managers should stay informed about new advancements in supply chain technologies and continuously evaluate their technology readiness. Regular assessments can help organizations stay competitive and agile in adapting to changes in the business environment. By fostering a culture of continuous improvement, organizations can maintain the flexibility to update inventory management techniques and technology as needed to sustain or enhance their supply chain efficiency.

5.2 Theoretical Implication

The findings challenge traditional supply chain efficiency models that primarily focus on inventory management techniques as the central factor influencing performance. By introducing technology readiness as a moderating variable, this study expands existing models to incorporate the role of technological infrastructure and employee preparedness in the effectiveness of inventory management. The theoretical implication is the need to integrate technology readiness as a key variable in conceptual models that link IMT to SCE. This enhances the explanatory power of models by acknowledging that technology adoption and readiness are not merely supportive but integral components that amplify the impact of traditional inventory management strategies.

The study provides empirical evidence that technology readiness enhances the effectiveness of inventory management practices, offering an extension of the Resource-Based View (RBV) theory. RBV suggests that organizations can gain competitive advantage through valuable, rare, inimitable, and non-substitutable resources. Technology readiness, when considered a strategic resource, acts as a complementary asset that strengthens the effectiveness of IMT in improving SCE. Thus, this research adds to the RBV literature by emphasizing the role of technological resources—both in terms of infrastructure and employee skills as critical to the successful implementation and impact of supply chain strategies.

The study underlines the importance of organizational capabilities, specifically technology readiness, in shaping supply chain performance. This finding supports and extends theories related to organizational capabilities and dynamic capabilities. The concept of dynamic capabilities refers to a firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Technology readiness, as an organizational capability, enables firms to better utilize inventory management techniques to enhance their supply chain efficiency. This contribution calls for more attention to how technological and human resources can be leveraged as dynamic capabilities in supply chain management theory.

The theoretical implications of this study further contribute to the literature on technological innovation in supply chains. The evidence that technology readiness moderates the relationship between inventory management techniques and supply chain efficiency suggests that technological advancements are not only important in their own right but also serve to amplify the effectiveness of other operational strategies. This finding enriches the body of knowledge on how technological innovation can create a competitive advantage, particularly in contexts where operational efficiency and process optimization (such as inventory management) are crucial to success.

5.3 Recommendations

Organizations should prioritize investments in robust technological infrastructure to ensure they have the tools necessary to support advanced inventory management techniques. This includes implementing systems for real-time inventory tracking, automated ordering systems, and data analytics platforms. The study highlights that the relationship between inventory management techniques and supply chain efficiency strengthens when technology readiness is high, making technological investment essential for optimizing supply chain performance.

Given that technology readiness encompasses the capability of employees to use technological tools effectively, organizations should invest in continuous training and development programs to enhance employee skills. Training should focus on supply chain management technologies, data interpretation, and the use of automation tools. A well-trained workforce is better equipped to adapt to new technologies, improving the effectiveness of inventory management practices and, by extension, supply chain efficiency.

Organizations should foster a positive attitude towards technology adoption within their supply chain teams. This involves creating an organizational culture that encourages the exploration of new technologies and views technological integration as a strategic opportunity rather than a challenge. Management should actively support technology adoption through clear communication, incentives, and demonstrating the benefits of adopting advanced technologies for inventory management and overall supply chain performance.

The study reveals that technology readiness amplifies the impact of inventory management techniques on supply chain efficiency. Therefore, organizations should explore and implement advanced inventory management systems (IMS) that leverage technologies such as AI, machine learning, and predictive analytics. These systems can optimize inventory levels, reduce waste, and enhance decision-making, directly improving supply chain efficiency.

Organizations should aim for greater integration across their supply chain functions by leveraging technological tools that enable real-time data sharing, automated communication, and collaboration between suppliers, warehouses, and logistics teams. Integrated systems can facilitate the seamless exchange of information, ensuring inventory management practices align with supply chain goals and that technology readiness supports real-time decision-making.

5.4 Suggestions for Future Studies

Future studies could investigate the moderating effect of technology readiness on the relationship between inventory management techniques and supply chain efficiency across different industries. Given that supply chain dynamics and technological adoption vary across sectors, research could explore how technology readiness influences IMT-SCE relationships in specific contexts such as manufacturing, retail, healthcare, or logistics. Understanding sector-specific challenges and technology adoption patterns could offer tailored recommendations for different industries.

A longitudinal study could track the evolution of technology readiness and its impact on inventory management techniques and supply chain efficiency over time. Such a study could assess the long-term effects of technological investments, workforce skill development, and technology adoption on organizational supply chain performance. By examining how the relationship between IMT and SCE evolves as technology readiness improves, researchers could provide more robust insights into the sustainability of technology-driven supply chain enhancements.

The current study considers technology readiness in a general sense, but future research could investigate how different types of technologies (e.g., Artificial Intelligence, Internet of Things, Machine Learning, Blockchain, Big Data Analytics) interact with inventory management techniques to impact supply chain efficiency. By distinguishing between various technological innovations, researchers could explore which technologies have the greatest moderating effects on IMT and SCE and how their adoption impacts operational outcomes.

REFERENCES

Alam, S., Rashid, A., & Rasheed, M. (2024). *Principles of inventory management: A practical guide*. New York: Inventory Press.

Baker, J., Cooper, D., & Smith, A. (2024). Strategies for inventory control and warehouse management. *Supply Chain Journal*, 15(2), 78–90.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99–120.

Cachon, G., & Terwiesch, C. (2020). *Matching supply with demand: An introduction to operations management*. McGraw-Hill Education.

Chen, Y., Li, J., & Wang, Z. (2021). Safety stock strategies for managing uncertainties in supply chains. *International Journal of Logistics Management*, *32*(4), 456–472.

Chien, C. F., Lin, C. Y., & Huang, C. C. (2021). Impact of inventory management techniques on supply chain performance: A review. *Journal of Supply Chain Management*, 47(3), 45-62. https://doi.org/10.1016/j.supplychain.2021.03.006

Chopra, S., & Meindl, P. (2019). *Supply Chain Management: Strategy, Planning, and Operation* (7th ed.). Pearson Education.

Chopra, S., & Meindl, P. (2020). The impact of technology on inventory and supply chain strategies. *Journal of Supply Chain Studies*, 22(4), 45–60.

Christopher, M. (2016). *Logistics and supply chain management*. Pearson.

Croxton, K. L., Lambert, D. M., & García-Dastugue, S. J. (2019). The role of technology in supply chain process integration. *Journal of Business Logistics*, 40(3), 255–270.

Demizu, Y. (2023). Inventory systems and optimization strategies. *Operations Management Review*, 34(1), 12–22.

Dubey, R., Gunasekaran, A., Childe, S. J., & Papadopoulos, T. (2018). Understanding technology readiness for inventory management integration. *Technological Forecasting & Social Change*, 132, 21–33.

Dunlap, A., & Lee, S. (2023). Technology readiness and its role in enhancing supply chain agility. *International Journal of Operations and Production Management*, 43(2), 134-152. https://doi.org/10.1108/IJOPM-03-2022-0214

Fernie, J., & Sparks, L. (2014). *Logistics and retail management: Emerging issues and new challenges in the retail supply chain*. Kogan Page Publishers.

Gligor, D. M., Esmark, C. L., & Holcomb, M. C. (2015). Performance outcomes of supply chain agility: When should you be agile? *Journal of Operations Management*, 33–34, 71–82.

Gunasekaran, A., Papadopoulos, T., Dubey, R., & Fosso Wamba, S. (2022). Big data analytics and firm performance: Effects of dynamic capabilities. *Production Planning & Control*, 33(1), 1–13.

Gunasekaran, A., Subramanian, N., & Rahman, S. (2017). Supply chain resilience: Role of complexities and strategies. *International Journal of Production Research*, 55(22), 6774–6790.

Heizer, J., Render, B., & Munson, C. (2020). *Operations management: Sustainability and supply chain management*. Pearson.

Ivanov, D., Tsipoulanidis, A., & Schönberger, J. (2019). *Global supply chain and operations management: A decision-oriented introduction to the creation of value*. Springer.

Johnson, P., & Davis, T. (2022). Technology readiness and supply chain optimization: A study on advanced algorithms. *Journal of Supply Chain Management Research*, *45*(3), 290–305.

Klaus, P., & Krüger, S. (2016). Real-time data in supply chain decision-making. *Supply Chain Technology Quarterly*, 12(1), 19–30.

Kumar, A., & Gupta, S. (2020). Enhancing supply chain efficiency through inventory visibility: The role of advanced technologies. *Supply Chain Innovation Journal*, *12*(2), 75–88.

Kumar, P., Singh, R., & Gupta, R. (2019). Optimizing supply chain performance using advanced inventory management techniques. *Supply Chain Management Review*, 20(1), 89-105. https://doi.org/10.1016/j.scman.2019.04.002

Kumar, R., Sharma, S., & Mehta, M. (2020). Exploring the impact of technology readiness on the implementation of inventory management techniques. *Journal of Business Research*, 115, 120-131. https://doi.org/10.1016/j.jbusres.2020.03.045

Kumar, S., & Singh, R. (2019). Economic Order Quantity (EOQ) as a tool for supply chain efficiency in retail. *Journal of Retail Logistics*, *8*(1), 32–50.

Lee, J., & Kim, H. (2019). Technology readiness and its impact on demand forecasting in supply chains. *Technological Forecasting and Social Change*, *145*, 12–25.

Lee, K. M., & Lee, H. W. (2022). The influence of inventory management techniques on supply chain efficiency: Evidence from a global study. *Journal of Business Logistics*, 43(2), 75-95. https://doi.org/10.1002/jbl.1223

Li, C., & Zhao, Y. (2020). Predictive analytics and inventory management: A supply chain perspective. *Journal of Operations Research and Analytics*, *18*(4), 231–246.

Li, S., Ragu-Nathan, B., & Subba Rao, S. (2020). The impact of supply chain practices on competitive advantage and organizational performance. *Omega*, 68, 41–53.

Liu, F., & Zhang, M. (2021). Forecasting accuracy and supply chain responsiveness in technologically advanced firms. *Supply Chain Management Review*, *15*(2), 94–108.

Mensah, A., Ofori, R., & Anane, S. (2021). Challenges in adopting advanced inventory management techniques: Evidence from Ghanaian SMEs. *African Journal of Business and Economic Research*, *16*(1), 45–60.

Mensah, K. A., Opoku-Agyeman, D., & Adusei, M. (2021). Barriers to inventory management efficiency in SMEs: Evidence from Ghana. *African Journal of Business Management*, 15(3), 89–100.

Mentzer, J. T., Stank, T. P., & Esper, T. L. (2019). Supply chain visibility and performance outcomes. *International Journal of Supply Chain Management*, 27(2), 64–75.

Ngai, E. W. T., Chau, D. C. K., & Chan, T. L. (2019). Advanced technologies in JIT inventory management. *International Journal of Production Economics*, 221, 107–116.

Nguyen, L., & Simkin, L. (2018). The impact of technology readiness on supply chain integration. *Asia Pacific Journal of Marketing and Logistics*, *30*(3), 512–531.

Parasuraman, A. (2000). Technology readiness index (TRI): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307–320.

Parasuraman, A. (2015). Technology readiness index (TRI): A multiple-item scale to measure readiness to embrace new technologies. *Journal of Service Research*, 2(4), 307–320.

Patel, R., & Gable, R. (2021). Enhancing supply chain collaboration through technological readiness. *Journal of Global Supply Chain Management*, *7*(3), 205–219.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.

Premkumar, G., & Roberts, M. (2019). Organizational readiness for technology adoption in supply chain systems. *Information Systems Management Journal*, 36(3), 190–201.

Sekaran, U., & Bougie, R. (2020). *Research Methods for Business: A Skill-Building Approach* (8th ed.). Wiley.

Serrano, A. M., Hernandez, J. L., & Garcia, L. F. (2020). Technology readiness and its impact on supply chain outcomes. *Technological Forecasting and Social Change*, 161, 120-133. https://doi.org/10.1016/j.techfore.2020.120312

Serrano, L., Ruiz, P., & García, D. F. (2021). The moderating role of technology readiness in inventory management systems. *Supply Chain Management: An International Journal*, 26(4), 473-491. https://doi.org/10.1108/SCM-03-2020-0156

Sharma, M., Bansal, S., & Agarwal, R. (2022). Leveraging technology readiness to optimize inventory management and supply chain efficiency. *International Journal of Logistics Management*, 33(1), 56-75. https://doi.org/10.1108/IJLM-12-2021-0397

Sharma, S., Pathak, S., & Srivastava, R. K. (2020). Inventory management practices and their impact on supply chain performance: A study on Indian retail. *Operations and Supply Chain Management*, 13(2), 123–134.

Silver, E. A., Pyke, D. F., & Thomas, D. J. (2017). *Inventory and production management in supply chains*. CRC Press.

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2019). *Designing and managing the supply chain: Concepts, strategies, and case studies*. McGraw-Hill Education.

Singh, A., & Tan, J. (2018). Risk management in inventory systems: The role of technology readiness. *Journal of Risk and Supply Chain Management*, *20*(4), 120–138.

Singh, R., & Davis, K. (2022). Advancing inventory management through technological capabilities. *International Journal of Operations and Production Management*, *42*(5), 623–645.

Singh, S., & Gupta, S. (2023). Impact of inventory management techniques on reducing operational waste in the supply chain. *Operations Management Research*, 15(1), 23-38. https://doi.org/10.1007/s11301-023-00182-w

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2019). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, *44*(1), 31–49.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2019). Resource orchestration to create competitive advantage: Breadth, depth, and life cycle effects. *Journal of Management*, 37(5), 1390–1412.

Tariq, M., Jabeen, S., & Zafar, M. A. (2022). The role of advanced technologies in supply chain management: Enhancing efficiency through automation. *Journal of Business and Technology*, 40(3), 115-129. https://doi.org/10.1016/j.jbus.2022.07.005

Waller, M. A., Fawcett, S. E., & Johnson, M. E. (2016). Inventory management systems and operational efficiency. *International Journal of Operations & Production Management*, 36(4), 456–478.

Wamba, S. F., Akter, S., & Edwards, A. (2020). The impact of technology readiness on supply chain innovation. *Journal of Supply Chain Innovation and Performance*, 8(2), 98–115.

Wang, X., & Lee, Y. (2018). Just-In-Time inventory systems and supply chain performance: A meta-analysis. *Journal of Manufacturing and Service Operations Management*, *20*(2), 77–88.

Wild, T. (2017). *Best Practice in Inventory Management* (3rd ed.). Routledge.

Zeng, H., Zhang, R., & Li, J. (2020). The effectiveness of inventory management techniques in improving supply chain efficiency: A case study approach. *Journal of Operations Management*, 38(2), 189-203. https://doi.org/10.1016/j.jom.2020.01.004

Zhang, W., & Wang, T. (2020). Flexible supply chain strategies in technologically advanced firms. *Operations Research Letters*, *47*(3), 176–181.

Zhang, X., Ding, D., & Li, X. (2019). Vendor-managed inventory in the digital age: Exploring the role of technology readiness. *Journal of Business Research*, 101, 531–539.

Zhao, X., Huo, B., Selen, W., & Yeung, J. H. Y. (2018). The impact of internal and external integration on supply chain efficiency. *Journal of Operations Management*, 38(3), 161–172.

Zhou, K., & Zhang, X. (2023). Artificial intelligence in inventory management: A competitive edge in dynamic markets. *Journal of Operations Management*, 68, 20–35.