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The effect of strategic inventory management on organizational performance: A mediating role of inventory management knowledge

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Abstract

The logistics industry in Oman plays a critical role in the nation's Vision 2040 economic diversification agenda. However, small and medium-sized enterprises (SMEs) in this sector face persistent challenges in managing inventory effectively due to limited resources, poor adoption of technology, and inadequate inventory management knowledge. This study investigates the effect of Strategic Inventory Management (SIM) practices on Organizational Performance (OP) in the logistics sector of Oman, with a focus on the mediating role of Inventory Management Knowledge (IMK). Grounded in the Resource-Based View, data were collected from 357 logistics SMEs through a structured questionnaire and analyzed using Structural Equation Modeling (SEM). Findings show that SIM significantly enhances OP, with Vendor Managed Inventory (VMI) and Material Requirement Planning (MRP) exerting the strongest impact. IMK was found to partially mediate the SIM and OP relationship, confirming their role as vital enablers in achieving sustainable performance. This research contributes to theory by extending RBV to logistics SMEs in an emerging economy and offers practical implications for managers and policymakers to strengthen technological and knowledge infrastructures in the logistics industry.

***Keywords*:** Inventory Management Knowledge; Organization Performance; Logistics SMEs; Oman; Inventory Management

1. Introduction

Oman's logistics industry has become a cornerstone of the nation's economic diversification efforts under Vision 2040. Located at the crossroads of Asia, Africa, and Europe, Oman's geographical position offers a significant advantage for trade and supply chain integration (Petrovic et al., 2019). The government has invested heavily in infrastructure such as ports in Shoar, Salalah, and Duqm, and has encouraged private sector participation to transform Oman into a regional logistics hub (World Bank, 2023). SMEs are integral to this transformation, representing over 90% of firms, contributing 15% of GDP, and employing more than 70% of the workforce in Oman (Kutty, 2022). Despite their importance, SMEs face critical challenges, including limited financing, insufficient IT infrastructure, weak supply chain resilience, and a lack of specialized knowledge (Cherian, 2020; Nizar & Matriano, 2022). Ineffective inventory practices often lead to stockouts, high carrying costs, and operational inefficiencies (Al-Ghassani & Al-Shidhani, 2020). These challenges are compounded by the fact that many SMEs in Oman are family-owned or informally managed, which often limits their adoption of modern management practices and technologies (OECD, 2021). Resource constraints restrict their ability to invest in advanced inventory management systems, while inadequate training prevents employees from fully leveraging available tools. As a result, decision-making is frequently reactive rather than strategic, which undermines competitiveness in a market where agility and responsiveness are critical.

Strategic Inventory Management (SIM) provides a pathway for SMEs to overcome these issues. SIM refers to the systematic management of inventory to balance demand and supply, minimize costs, and improve service quality (Chopra & Meindl, 2020). Practices such as Vendor Managed Inventory (VMI), Material Requirement Planning (MRP), Just-in-Time (JIT), Economic Order Quantity (EOQ), and ABC analysis are widely used in advanced economies but are underutilized in SMEs in emerging contexts (Batista, 2018). In addition, Inventory Management Knowledge (IMK) is essential for successful SIM implementation. IMK ensures that managers and employees possess the expertise to use this tool effectively (Jacobs et al., 2022). Together, these factors align with the Resource-Based View (RBV), which emphasizes leveraging valuable, rare, inimitable, and non-substitutable resources for competitive advantage (Barney, 1991). This study addresses the research gap by examining the direct effects of SIM on organizational performance in Oman's logistics SMEs and testing the mediating roles of IMK. The study aims to contribute both theoretical insights and practical recommendations to enhance SME competitiveness in emerging economies.

2. Literature Review

2.1 The Logistics Industry in Oman

Oman's logistics sector has undergone transformation since the oil crisis of 2016, with diversification policies prioritizing logistics as a growth sector (Al-Wahaibi, 2018). The

establishment of ASYAD Group and the Sultanate of Oman Logistics Strategy (SOLS) 2040 reflects the government's commitment to positioning Oman among the top global logistics hubs. Investments in multimodal infrastructure, customs modernization, and digital platforms have improved logistics performance, yet SMEs still lag behind in adopting advanced systems (OECD, 2021). On the infrastructure and policy side, Oman has prioritized multimodal connectivity (ports, roads, airports, and planned rail), customs modernization, and single-window digital platforms to reduce clearance times and improve transparency. These reforms are reflected in international benchmarking: the World Bank's Logistics Performance Index (LPI) 2023 ranks Oman within the mid-range of countries, and the LPI's expanded 2023 dataset highlights gains from digitization and faster trade flows where reforms have been implemented.

2.2 Organizational Performance

Organizational performance refers to the extent to which a firm achieves its strategic objectives by aligning employee output with organizational expectations (Kalaitzi & Tsolakis, 2022). High levels of performance depend on the integration of individual goals with organizational aims, supported by clear job descriptions, measurable performance metrics, and systematic feedback mechanisms. Effective leadership provides vision and direction, organizational culture fosters commitment and engagement, while efficient resource utilization ensures that outcomes are achieved at the lowest cost with minimal waste (Shen et al., 2023). Recent studies continue to highlight the strong relationship between supply chain practices, particularly inventory management, and organizational effectiveness. Research in Ghana demonstrates that inventory management techniques directly improve supply chain efficiency, with technology readiness strengthening this effect (Singh et al., 2025; Opoku et al., 2024). Resilient inventory systems are also seen as essential to maintain delivery dependability, cost efficiency, quality, and flexibility in the face of global supply disruptions (Shah et al., 2024).

Organizational performance is typically assessed using both financial and non-financial indicators. Business owners evaluate goal achievement, investors focus on profitability and productivity, managers review past performance to improve future strategies, and employees track productivity to meet bonus or recognition thresholds (Lee et al., 2015). Empirical evidence shows that supply chain practices such as information sharing and strategic supplier partnerships significantly enhance organizational performance, as demonstrated in textile firms in Karachi (Khan et al., 2023). Recent studies have emphasized that flexibility, in particular, strengthens innovation and mediates performance outcomes in dynamic business environments (Zhang et al., 2025). Because organizational performance is inherently multidimensional, researchers advocate for composite measures that integrate financial, operational, and innovation-related metrics rather than relying on a single indicator (Hassan et al., 2023).

In the logistics sector, balancing cost efficiency with high-quality service delivery is a major challenge. High logistics costs remain a barrier to competitiveness, especially in developing

economies (Soh et al., 2015). However, recent evidence suggests that effective risk management, supply chain integration, and demand adaptation improve performance in the automotive logistics sector (Ahmed et al., 2024). Furthermore, digitalization and "smart" practices – including predictive analytics, IoT, and AI have been shown to boost productivity, customer satisfaction, safety, and sustainability outcomes (Ali et al., 2023). Overall, organizational performance is shaped by a combination of individual contributions, effective supply chain and inventory management, leadership, culture, and resource utilization. Organizations that integrate these elements, while leveraging digital tools and flexibility, are more likely to achieve sustainable competitive advantage in today's complex logistics environment.

2.3 Strategic Inventory Management

Muchaendepi et al. (2019) described inventory as the stock retained by organizations for future use, encompassing raw materials, work-in-progress, and finished goods. Within logistics, inventory includes goods ready for distribution as well as materials transported from suppliers to firms (Atnafu & Balda, 2018). The categorization of inventory types is crucial for understanding how strategic inventory management affects organizational performance, particularly in Oman's logistics sector. Prior studies emphasize that inventory decisions directly influence the supply chain quality and organizational efficiency. For example, Kuei (2001) highlighted those improvements in supply chain quality management are strongly associated with enhanced performance outcomes. Conversely, excessive stock levels negatively affect procurement and financial efficiency, as holding large inventories ties up capital, reduces liquidity, and disrupts operational effectiveness (Resia, 2014).

Strategic inventory management, therefore, requires the application of structured approaches that align with organizational objectives. Singh and Verma (2018) noted that strategies originally pioneered by global manufacturers such as Toyota and Ford have since been adopted across industries worldwide. These practices, when supported by effective planning, significantly improve efficiency and reduce costs. Contemporary approaches include demand forecasting, perpetual inventory systems, consignment stock, Six Sigma practices, batch tracking, lean manufacturing, ABC classification, reorder point methods, just-in-time delivery, and minimum order quality models (Atnafu & Balda, 2018; Chukwu et al., 2022; Jacobs et al., 2022). Collectively, these methods enable firms to reduce waste, optimize capital use, and strengthen competitiveness. From a competitive advantage perspective, strategic inventory practices provide firms with the ability to differentiate themselves in the market. Song, Van Houtum, and Van Mieghem (2020) argue that inventory strategies such as demand forecasting, just-in-time replenishment, and vendor collaboration improve reliability and reduce costs, thereby enhancing market position. For logistics providers, efficient inventory systems not only ensure timely deliveries but also strengthen customer trust and loyalty, thereby reinforcing organizational reputation and long-term performance (Yunusa, 2021).

Scholars further emphasize that strategic inventory management enables the efficient utilization of production resources. Petersson and Nellgard (2020) demonstrated that proactive inventory planning minimizes idle time, accelerates production throughput, and reduces operational costs. Such efficiency translates into improved organizational outcomes, as observed in manufacturing and service settings. Recent evidence also highlights the broader benefits of SIM, including shorter delivery lead times, improved supply chain collaboration, and stronger financial performance (Silaen, Nasution, & Muti'ah, 2024). Moreover, technological integration has amplified the role of inventory systems. With digital tools and automation, firms are able to monitor stock levels in real time, anticipate demand fluctuations, and optimize replenishment decisions (Badr & Ahmed, 2023). Automation reduces human error, accelerates decision-making, and enhances responsiveness to customer demands (Chukwu, Afolayan, and Yusuf, 2022).

Strategic inventory also strengthens supplier-buyer relationships. Suppliers that maintain accurate stock visibility and timely deliveries avoid costly disruptions and improve client retention, while those lacking efficient systems risk losing business due to unreliability (Luoma, 2021). Hence, both manufacturers and logistics providers benefit from well-structured inventory strategies, as they enhance supply chain continuity and organizational resilience (Cesarelli et al., 2021). Overall, the literature establishes that SIM not only reduces holding costs and idle resources but also creates a competitive advantage, operational efficiency, and customer satisfaction. These outcomes validate the argument that SIM is a cornerstone of organizational success across industries and regions (Roy, Gilbert, & Lai, 2019; Wahedi et al., 2023). Based on the above literature review, the following hypotheses were developed:

- Hypothesis 1: Strategic Inventory Management has a significant impact on Organizational Performance.
- Hypothesis 2: Strategic Inventory Management has a significant impact on Inventory Management Knowledge.

2.4 Vendor Managed Inventory

Vendor Managed Inventory (VMI) is a collaborative supply chain strategy in which the supplier assumes responsibility for planning, monitoring, and replenishing the buyer's inventory based on agreed principles and shared information. Unlike traditional inventory management, where buyers place orders and suppliers fulfil them, VMI enables the vendor to generate purchase orders and deliver replenishments according to jointly defined stock levels, demand forecasts, and consumption data (Smaros et al., 2003; Dong, Dresner, & Yao, 2014; Sarkar & Guchhait, 2023). Through this arrangement, suppliers gain visibility into the buyer's real-time inventory and sales data, enabling them to make informed replenishment decisions that reduce uncertainty and improve supply chain responsiveness (Mukucha & Chari, 2023; Stolze, Brusco, & Smith, 2021).

The implementation of VMI has been shown to provide significant benefits, including reduced stockouts, lower inventory levels, and dampened demand variability, which helps mitigate the bullwhip effect. Furthermore, advanced VMI models address complex realities such as probabilistic demand, deteriorating goods, and multi-echelon supply chains, optimizing replenishment cycles and minimizing costs across different stages of the supply chain (Guchhait et al., 2023; Rani et al., 2023). With advancements in Industry 4.0, digital tools such as IoT, ERP, RFID, and blockchain have further enhanced VMI effectiveness by enabling real-time visibility, automated demand sensing, and transparent transaction records (Li et al., 2023). However, challenges remain in terms of implementation costs, organizational resistance, and vendor exposure to higher risks, particularly when demand forecasting is uncertain (Guchhait et al., 2023; Springer, 2023).

Overall, VMI represents a strategic approach in supply chain management, aligning processes across multiple organizations to improve efficiency, responsiveness, and customer satisfaction. Modern applications increasingly integrate sustainability concerns, such as minimizing carbon emissions and reducing waste in replenishment decisions, positioning VMI as a critical enabler of resilient and sustainable supply chains (Li et al. 2023; Arxiv, 2024). Based on the above literature review, the following hypotheses were developed:

- Hypothesis 3: Vendor Managed Inventory has a significant impact on Organizational Performance.
- Hypothesis 4: Vendor Managed Inventory has a significant impact on Inventory Management Knowledge.

2.5 Material Requirement Planning

Material Requirements Planning (MRP) is a structured production-planning and inventory control methodology that, when adopted in Omani firms, strengthens organizational performance by improving material availability, reducing waste and holding costs, and synchronizing production and procurement with demand. In the Oman context where supply chain fragmentation, variable lead times, and sectoral shifts (e.g., logistics, construction, and manufacturing) create recurrent material shortages and cost inefficiencies – MRP's ability to "explode" a master production schedule into time-phased component requirements helps firms avoid stockouts and unplanned production stops, thereby improving delivery performance and customer service levels (IJBMI, 2022). By minimizing excess inventory through precise order timing and quantities, MRP reduces carrying costs, depreciation, and obsolescence, which in turn frees working capital and supports healthier operating cash flows and profitability metrics (Taylor & Francis, 2023; TechTarget, 2024). When MRP is integrated with digital tools such as ERP systems, supplier portals, IoT, and demand-sensing algorithms, Omani firms realize additional gains in forecast accuracy, inventory turnover, and responsiveness to demand spikes, translating into measurable operational

efficiencies and lower total supply-chain costs (SAP, 2024; NetSuite, 2024; MEJM, 2024). Practical implementations and lean-inventory modernization projects presented at recent Oman Supply Chain and Logistics Conferences further indicate that tailored MRP and lean hybrids can cut lead times and inventory waste for SMEs and large firms alike, thereby improving productivity and competitiveness in the Sultanate's industrial and construction sectors (Conference Proceedings – Oman Supply Chain and Logistics Conference, 2023; Accio Consulting, 2023). Based on the above literature review, the following hypotheses were developed:

- Hypothesis 5: Material Requirements Planning has a significant impact on Organizational Performance.
- Hypothesis 6: Material Requirements Planning has a significant impact on Inventory Management Knowledge.

2.6 Just-in-Time

Just-in-time (JIT) production philosophy, originating in Japan focuses on delivering the right inputs in the right quantity, quality, place and moment to eliminate waste and improve responsiveness; recent meta analytic and empirical work demonstrates that JIT adoption is positively associated with both operational and empirical work demonstrates that JIT adoption is positively associated with both operational and financial performance (reduced inventory days, higher asset turnover, and improved profit margins), while its effectiveness is amplified when coupled with Industry 4.0 technologies that improve visibility and forecasting (Gzarcia-Cutrin, 2024; Al-Okaily, 2024). In practice, JIT reduces holding costs, obsolescence and pilferage and frees working capital, which translates directly into healthier operating cash flows and higher return on assets in contexts where lead times and storage costs are significant (Garcia-Cutrin, 2024; Marinagi et al., 2023). Evidence from Omani firms suggests the same mechanisms operate locally: studies of manufacturing companies listed in Oman Report that tighter working-capital management (including reduced inventory days and shorter cash-conversion cycles) improves profitability, indicating that JIT-like inventory compression can strengthen firm performance in the Sultanate (Al Balushi & Locke, 2022). Moreover, the integration of digital systems – ERP, IoT/RFID, supplier portals, and demand-sensing algorithms – supports safer and more effective JIT implementation by improving real-time inventory accuracy, automating replenishment triggers, and reducing supply-risk exposure, which has been shown globally to increase inventory turnover and operational resilience (Marinagi et al., 2023). Taken together, the literature indicates that Omani firms that combine lean JIT principles with robust digital infrastructures and reliable supplier coordination are well-positioned to convert lower inventory investment into improved liquidity, reduced total supply-chain cost, and enhanced competitive performance. Based on the above literature review, the following hypotheses were developed:

- Hypothesis 7: Just-in-Time has a significant impact on Organizational Performance.
- Hypothesis 8: Just-in-Time has a significant impact on Inventory Management Knowledge.

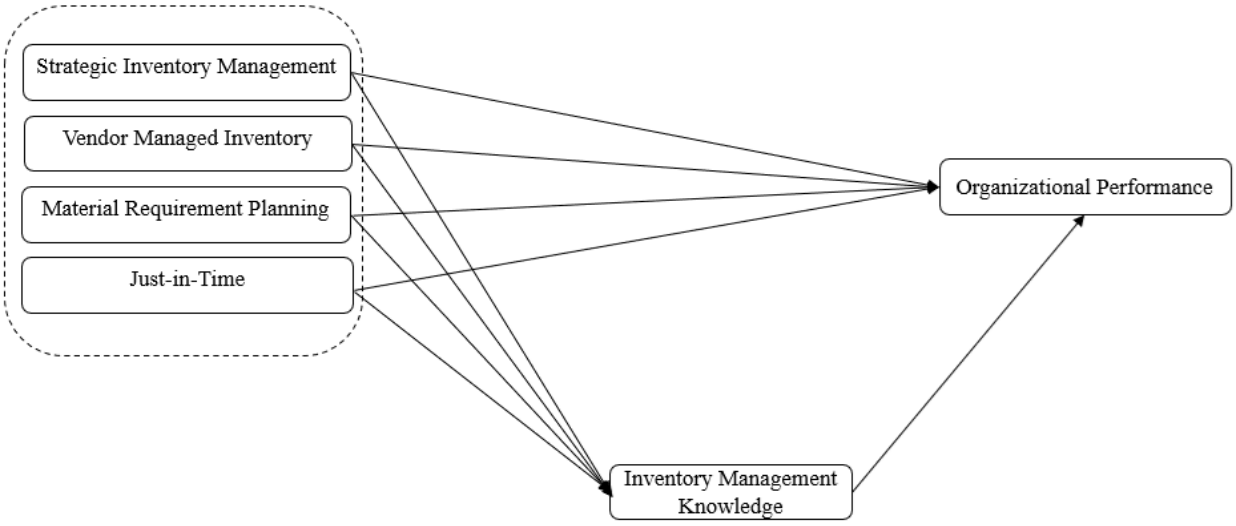
2.7 Inventory Management Knowledge (Mediator)

Effective inventory management is strongly associated with enhanced organizational performance, and contemporary literature identifies managerial knowledge and workforce competence as critical enablers of this relationship: contextual elements such as task allocation, decision-making procedures, personnel behaviour, and communication channels shape how inventory systems operate and are redesigned, and when these human factors are strong, inventory practices more reliably translate into improved efficiency, profitability, and cash flow (Soundararajan, Banu, & Doss, 2024; Idrees, 2023). Empirical studies show that targeted training and managerial know-how encourage the adoption of systematic inventory controls- improving order accuracy, reducing stockouts and pilferage, and raising inventory turnover – which in turn supports better firm performance (Rashid, 2023; Wu, 2024). Evidence from the Gulf and Oman specifically further suggests that firms with tighter working-capital regimes (shorter days inventory outstanding and faster cash conversion cycles) achieve superior returns, implying that JIT-style compression of inventory enabled by competent staff and proper knowledge management can improve profitability in the Omani context (Hofmann, 2022; Soundararajan et al., 2024). Accordingly, we posit that inventory management knowledge functions as a mediator between inventory management practices and organizational performance: firms that pair robust inventory systems with formal training, knowledge sharing, and empowered decision-making are more likely to convert operational inventory gains into measurable financial and service outcomes. From the foregoing literature, the following hypotheses are proposed:

- Hypothesis 9: Inventory Management Knowledge has a significant impact on Organizational Performance.
- Hypothesis 10: Inventory Management Knowledge mediates the relationship between inventory management practices and organizational performance.
- Hypothesis 10a: Inventory Management Knowledge mediates the relationship between vendor managed inventory and organizational performance.
- Hypothesis 10b: Inventory Management Knowledge mediates the relationship between material requirement planning and organizational performance.
- Hypothesis 10ca: Inventory Management Knowledge mediates the relationship between just-in-time and organizational performance.

2.8 Research Framework

Figure 1. The research framework



3. Methodology

3.1 Sampling Method and Unit of Analysis Technique

This study surveyed 357 managers from SMEs operating in Oman's logistics sector between June and December 2024. The focus on logistics companies is justified, as the sector has been identified as a critical driver of Oman's economic diversification under Vision 2020 and is particularly sensitive to external relations dynamics and global trade fluctuations (Eisenhardt & Schoonhoven, 1996; van de Vrandle et al., 2009; Al-Hiniai, Al-Harthy, & Al-Balushi, 2022). The target population consisted of respondents at the assistant manager level and above, including members of management teams and/or owners, who were directly involved in operations, product development, and decision-making related to inventory and supply chain management. A random sampling strategy was employed. Shortlisted firms were first contacted via telephone, and following initial screening, appointments were arranged for questionnaire distribution. Respondents rated statements on independent and dependent variables using a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree, where a rating of 3 = neutral). Explanations were provided where necessary to ensure clarity and consistency of responses. The concepts and measurement items were developed based on - Strategic Inventory Management (Oballah, Waiganjo, & Wachiuri, 2015); Vendor-Managed Inventory (Sainathan & Groenevelt, 2019; Kuk, 2004; Atnafu & Balda, 2018); Material Requirement Planning (Khalid & Lim, 2018); Just-In-Time (Claycomb, Droge, & Germain, 1999; Atnafu & Balda, 2018; Khalid & Lim, 2018); Inventory Management Knowledge (Martins, Rampasso, Anholon, Quelhas, & Leal Filho, 2019; Kiessling, Richey, Meng, & Dabic, 2009; Rhodes, Hung, Lok, Ya-Hui lien, & Wu, 2008); and Organizational Performance (Khalid & Lim, 2018; Atnafu & Balda, 2018; Tarigan, Mochtar, Basana, & Siagian

2021; McKeen, Zack, & Singh 2006). A pilot study involving 64 firms was conducted to test the reliability of the measurement instruments. The data were analyzed using SPSS® Statistics v.26 and AMOS v.26. Reliability was assessed using Cronbach's alpha (>0.07), confirming internal consistency (Hair, Hult, Ringle, & Sarstedt, 2019), while validity was tested through Confirmatory Factor Analysis (CFA). Structural Equation Modeling (SEM) tested direct and mediating relationships.

4. Results and Discussion

Table 1 shows the demographic profile of the respondents. Out of 357 respondents, majority of the respondents were male (348 or 97.5%). Based on age category, the majority of the respondents were in the age category of 21 to 30 years old (135 or 37.8%). In the education qualification of the respondents, most of the respondents hold a bachelor's degree (187 or 52.4%). In terms of department category, the majority of the respondents were working in the procurement department (125 or 35%). Results showed the majority of the respondents were directors/owners (119 or 33.3%) and had 5 to 10 years of working experience in the same industry.

Table 1. Demographic Profile of the Respondents

Item	Categories	Frequency	Percent	Cumulative
Gender	Male	348	97.5	97.7
	Female	9	2.5	100.0
Age	Under 20 Years	42	11.8	11.8
	21 - 30 Years	135	37.8	49.6
	31 - 40 Years	108	30.3	79.8
	41 - 50 Years	65	18.2	98.0
	Above 50 Years	7	2.0	100.0
Highest Education Level	O-Level	19	5.3	5.3
	A-Level/Diploma	56	15.7	21.0
	Bachelor's/Professional Degree	187	52.4	73.4
	Master's Degree/PhD	93	26.1	99.4
	Others, please specify	2	.6	100.0
Department	Operations	108	30.3	30.3
	Warehouse	92	25.8	56.0
	Procurement	125	35.0	91.0
	Others, please specify	32	9.0	100.0
Occupational Category	Executive	109	30.5	30.5
	Manager/General Manager	65	18.2	48.7
	COO/CEO	43	12.0	60.8
	Director/Owner	119	33.3	94.1
	Others, please specify	21	5.9	100.0
	Less than 5 years	49	13.7	13.7
	5 – 10 Years	129	36.1	49.8

Experience in the same industry	11 – 20 Years	99	27.7	77.6
	More than 20 Years	80	22.4	100.0
Overall Experience	Less than 5 years	41	11.5	11.5
	5 – 10 Years	140	39.2	50.7
	11 – 20 Years	110	30.8	81.5
	More than 20 Years	66	18.5	100.0

The results in Table 2 indicate that the skewness and kurtosis values for all variables fall within the acceptable range (-1.96 to 1.96), while the multivariate critical ratio (c.r = 4.68) is below the threshold of 8.00. Therefore, the sample data distribution can be considered approximately normal. Additionally, Table 3 shows the Tolerance and Variance Inflation Factor (VIF) values for all the variables are provided. Following the guidelines by Hair et al. (2019) and Kline (2016), multicollinearity is a concern when tolerance values are less than 0.10 or when VIF values exceed 10. In this study, all values fall within the recommended limits, suggesting that multicollinearity is not present. Non-response bias was assessed by comparing the first and last 40 respondents using independent sample *t*-tests. Results in Table 4 show no significant differences were observed across constructs, indicating that non-response bias was not evident in this study (Armstrong & Overton, 1977; Podsakoff et al., 2012). The model fit index of all 53 items indicated acceptable fit as the CMIN/DF = 1.746 < 5.0, CFI = .907 > .900, GFI = .853 < .900, RMSEA = .044 < .08. GFI is (.853), (recommended value for GFI is > 0.8) respectively. The internal consistency reliability was evaluated using Cronbach's alpha. As result shown in Table 5, all constructs exceeded the 0.70 threshold, indicating satisfactory reliability (Hair et al., 2019; McNeish, 2018). Finally, convergent and discriminant validity were examined using composite Reliability (CR) and Average Variance Extracted (AVE). The result in Table 6 indicates that all CR values exceeded 0.70 and AVE values surpassed 0.50, supporting convergent validity. Furthermore, the square root of AVE for each construct was greater than its inter-construct correlations, confirming discriminant validity (Hair et al., 2019; Tabachnick & Fidell, 2019).

Table 2. Assessment of Normality

Factor	min	max	skew	C.R.	kurtosis	C.R.
Organizational Performance	3.00	5.00	-.17	.13	.24	-2.68
Inventory Management Knowledge	3.00	5.00	-.01	-3.62	-.24	-1.59
Strategic Inventory Management	3.00	5.00	.09	-5.45	-.33	.74
Vendor Managed Inventory	3.00	5.00	-.43	-3.77	-.38	-.02
Material Requirement Planning	3.00	5.00	-.09	-1.78	-.24	-1.72
Just-in-Time	3.00	5.00	-.36	-5.13	-.17	.37
Multivariate					**4.45**	**5.33**

Table 3. Multicollinearity Analysis

Dimensions	Tolerance	Variance Inflation Factors (VIF)
Inventory Management Knowledge	.480	2.085
Strategic Inventory Management	.641	1.560
Vendor Managed Inventory	.642	1.558
Material Requirement Planning	.615	1.627
Just-in-Time	.513	1.947

Dependent Variable: Organizational Performance

Table 4. T-test (non-response bias)

Variables	First respondents (N = 40)	Last respondents (N = 40)	T-Statistic	Significance (p)
Organizational Performance	4.61	4.51	1.22	.229
Inventory Management Knowledge	4.49	4.52	.427	.153
Strategic Inventory Management	4.52	4.46	.684	.498
Vendor Managed Inventory	4.45	4.34	1.53	.134
Material Requirement Planning	4.41	4.31	1.05	.300
Just-in-Time	4.49	4.38	1.43	.161

Table 5. Reliability Test

Variable	Number of Items	Cronbach's Alpha (α)
Organizational Performance	13	.700
Inventory Management Knowledge	12	.811
Strategic Inventory Management	8	.767
Vendor Managed Inventory	8	.783
Material Requirement Planning	6	.777
Just-in-Time	6	.794

Table 6. Discriminant Validity

	CR	AVE	MSV	OP	IMK	SIM	VMI	MRP	JIT
OP	0.794	0.562	0.250	1					
IMK	0.816	0.525	0.315	0.561	1				
SIM	0.858	0.531	0.315	0.298	**0.511**	1			
VMI	0.882	0.584	0.282	0.412	0.512	**0.535**	1		
MRP	0.834	0.503	0.282	0.370	0.482	0.420	**0.525**	1	
JIT	0.883	0.588	0.299	0.301	0.511	0.386	0.439	**0.514**	1

Note: All correlations are significant at the 0.01 level (2-tailed). OP = Organizational Performance; IMK = Inventory Management Knowledge; SIM = Strategic Inventory Management; VMI = Vendor Managed Inventory; MRP = Material Requirement Planning; and JIT = Just-In-Time

4.1 Hypothesis Testing Using Structural Equation Modelling (SEM)

4.1.1 Direct Effect of Predictor Variables on Dependent Variable

SEM is a multivariate statistical technique that was used to analyze structural relationships between the measured variables and latent constructs (Statistics-Solutions, 2017). The structural model was constructed based on the hypotheses developed in this study. The model fit indices demonstrate acceptable values according to recent SEM guidelines. Specifically, the CFI value of .931 exceeds the recommended threshold of .900, indicating a good comparative fit (Hair et al., 2019; Hu & Bentler, 1999). Similarly, the GFI value of .818 surpasses the minimum acceptable level of .80, supporting model adequacy (Kline, 2016). In this model, the four key dimensions of Strategic Inventory Management, Vendor-Managed Inventory, Material Requirement Planning, and Just-in-Time act as predictor variables, while organizational performance serves as the dependent variable. The model fit indices confirm that the structural model adequately fits the data, with CMIN/DF = 1.77, CFI = .902, GFI = .849, and RMSEA = .044, all of which fall within the recommended thresholds for good model fit (Byrne, 2016; Hair et al., 2019). The direct effect of predictor variables (Strategic Inventory Management, Vendor Managed Inventory, Material Requirement Planning, and Just-in-Time) on the dependent variable (Organizational Performance) model shows that CMIN/DF = 3.574 < 5.0, CFI = .996 > .900, GFI = .997 > .900, RMSEA = .045 < .08 at $p < .05$. Since the model demonstrates an acceptable fit (Hair et al., 2019; Krajewski, Malhotra, & Ritzman, 2022). The standardized regression weights in Table 7 show that all predictor variables exert significant and positive effects on organizational performance ($p<0.05$). Specifically, Strategic Inventory Management (β = .298), Vendor Management Inventory (β = .412), Material Requirement Planning (β = .370), and Just-in-Time (β = .301) each contribute meaningfully to enhancing Organizational Performance. These results align with prior research emphasizing the role of effective inventory management strategies in improving organizational

efficiency and competitiveness (Luthra & Mangla, 2018; Hair, 2019; Krajewski et al., 2022). Therefore, hypotheses are accepted.

Table 7. Direct Effect of Predictor Variables on Dependent Variable

Paths			P	Standardized β
Strategic Inventory Management	→	Organizational Performance	.001	.298
Vendor Managed Inventory	→	Organizational Performance	.001	.412
Material Requirement Planning	→	Organizational Performance	.001	.370
Just-In-Time	→	Organizational Performance	.001	.301

4.1.2 Direct Effect of Predictor Variables on Mediating Variable

In this model, the four dimensions of Strategic Inventory Management, Vendor Managed Inventory, Material Requirement Planning, and Just-in-Time act as predictor variables, while Inventory Management Knowledge serves as the dependent variable. The model fit indices confirm that the structural model adequately fits the data, with CMIN/DF = 0.000 < 5.0, CFI = .999 > .900, GFI = .999 > .900, RMSEA = .034 < .08 at $p < .05$, all of which fall within the recommended thresholds for good model fit (Byrne, 2016; Hair et al., 2019). The standardized regression weights in Table 8 show that all predictor variables exert significant and positive effects on organizational performance ($p<0.05$). Specifically, the effects are more pronounced, with Vendor Managed Inventory (β = .512), Strategic Inventory Management (β = .511), and Just-in-Time (β = .511) emerging as the strongest contributors, followed by Material Requirement Planning (β = .482). This finding suggests that while inventory management practices are critical for fostering technological integration, their influence is comparatively greater in strengthening organizational knowledge related to inventory management, which in turn drives operational performance (Akter et al., 2023; Wong et al., 2023). Therefore, hypotheses are accepted.

Table 8. Direct Effect of Predictor Variables on Mediating Variable

Paths			P	Standardized β
Strategic Inventory Management	→	Inventory Management Knowledge	.001	.511
Vendor Managed Inventory	→	Inventory Management Knowledge	.001	.512

Paths			P	Standardized β
Material Requirement Planning	→	Inventory Management Knowledge	.001	.482
Just-In-Time	→	Inventory Management Knowledge	.001	.511

4.1.3 Direct Effect of Mediating Variable on Dependent Variable

The subsequent analysis focused on the Inventory Management Knowledge in relation to Organizational Performance. The standardized regression coefficient result in Table 9 shows (β = .561; *p<0.05*), confirming a statistically significant and positive relationship. This finding to theories of knowledge capital, absorptive capacity, or the resource-based view, noting that knowledge-based resources often translate into competitive outcomes (Nonaka & Takeuchi, 1995; Grant, 2022). Therefore, the hypothesis is accepted.

Table 9. Direct Effect of Mediating Variables on Dependent Variable

Paths			P	Standardized β
Inventory Management Knowledge	→	Organizational Performance	.000	.561

4.2 Mediating Effect

The mediating role of Inventory Management Knowledge was further examined using SEM analysis. The results reveal that Strategic Inventory Management, Vendor Managed Inventory, Material Requirement Planning, and Just-in-Time exert both direct and indirect effects on Organizational Performance, confirming the presence of partial and full mediation. The result in Table 10 shows that Inventory Management Knowledge is a full mediator in the relationship between Strategic Inventory Management and Organizational Performance. The result indicates that Inventory Management Knowledge fully mediates the relationship between Strategic Inventory Management and Organizational Performance. Initially, the total effect of Strategic Inventory Management on Organizational Performance was significant *(β = .298; P = .001 < 0.05)*. Next, Strategic Inventory Management significantly predicted Inventory Management Knowledge (β = 0.511, p = 0.001), and Inventory Management Knowledge in turn significantly predicted Organizational Performance (β = 0.561, p = 0.001). However, once Inventory Management Knowledge was included in the model, the direct effect of Strategic Inventory Management on Organizational Performance became non-significant (β = 0.015, p = 0.763). This drop in significance when controlling for the mediator satisfies the conditions for full mediation (Zhao, Lynch, & Chen, 2010; Imai, Keele, & Tingley, 2010), and therefore, hypothesis 10 is supported. On the relationship, the results indicate that Inventory Management Knowledge

(IMK)functions as a partial mediator between Vendor Managed Inventory (VMI) and Organizational Performance (OP). The total effect of VMI on OP was significant (β = 0.412, p = 0.001 < 0.05). in subsequent analyses, VMI significantly predicted IMK ((β = 0.512, p = 0.001 < 0.05), and IMK significantly predicted OP (β = 0.561, p = 0.001 < 0.05). When the mediator was included in the model, the direct relationship between VMI and OP remained significant (p = 0.001 < 0.05), though the standardized coefficient decreased to (β = 0.169). This reduction in effect size, while maintaining significance, confirms that IMK partially mediates the relationship between VMI and OP, thereby supporting hypothesis 10a. In line with the results indicate that IMK serves as a partial mediator in the relationship between MRP and OP. The total effect of MRP on OP was significant (β = 0.370, p = 0.001 < 0.05). In subsequent steps, MRP significantly predicted IMK (β = 0.482, p = 0.001 < 0.05), and IMK significantly predicted OP (β = 0.561, p = 0.001 < 0.05). When IMK was included in the model, the direct effect of MRP on OP remained significant (p=0.001 < 0.05), but the standardized coefficient decreased to (β = 0.129). This reduction in effect size while maintaining significance confirms that IMK partially mediates the relationship between MRP and OP. Thus, hypothesis 10b is supported.

In contrast, the results for hypothesis 10c reveal that IMK acts as a full mediator in the relationship between Just-in-Time (JIT) practices and OP. The total effect of JIT on OP was significant (β = 0.301, p = 0.001 < 0.05). Similarly, JIT significantly predicted IMK (β = 0.511, p = 0.001 < 0.05), and IMK significantly influenced OP (β = 0.561, p = 0.001 < 0.05). However, when IMK was introduced as a mediator, the direct effect of JIT on OP became non-significant (p = 0.695 > 0.05), and the standardized coefficient dropped sharply to (β = 0.020). This complete loss of significance in the direct path indicates that IMK fully mediates the relationship between JIT and OP, thereby supporting hypothesis 10c.

Table 10. Mediating Effect

Directions			Direct Effect (IV to DV)	Mediator	IV to MV	MV to DV	Indirect Effect	Findings
Strategic Inventory Management	→	Organizational Performance	.298 (.001)	IMK	.511 (.001)	.561 (.001)	.015 (.763)	Full M
Vendor Managed Inventory	→	Organizational Performance	.412 (.001)	IMK	.512 (.001)		.169 (.001)	Partial M
Material Requirement Planning	→	Organizational Performance	.370 (.001)	IMK	.482 (.001)		.129 (.001)	Partial M

Directions		Direct Effect (IV to DV)	Mediator	IV to MV	MV to DV	Indirect Effect	Findings
Just-In-Time →	Organizational Performance	.301 (.001)	IMK	.511 (.001)		.020 (.695)	Full M

IMK = Inventory Management Knowledge

5. Conclusion, Recommendations, and Future Research Directions

This study examined the influence of SIM on OP among logistics SMEs in Oman, with a focus on the mediating role of IMK. Guided by the Resource-Based View (RBV), the research demonstrated that effective inventory strategies – comprising VMI, MRP, and JIT significantly enhance organizational outcomes by improving efficiency, reducing costs, and strengthening competitiveness. The empirical evidence from SEM confirmed that SIM exerts a direct positive effect on OP and that IMK functions as both a full and partial mediator in different relationships, underscoring the critical role of knowledge in transforming inventory practices into tangible performance benefits. The findings highlight that VMI and MRP practices are particularly influential in enhancing performance due to their ability to improve coordination, information visibility, and material flow across the supply chain. Moreover, the results reveal that IMK fully mediates the relationships between SIM and OP, as well as between JIT and OP, suggesting that knowledge and capability development are essential to realize the full potential of strategic inventory systems. Firms that possess high levels of inventory management expertise are better equipped to implement advanced systems, interpret data effectively, and make informed operational decisions that lead to superior performance outcomes.

From the theoretical perspective, this study extends the RBV framework by validating the role of IMK as a strategic intangible resource that drives competitive advantage in logistics SMEs operating in emerging economies. It demonstrates that knowledge-based competencies enable firms to leverage their operational resources more effectively, transforming inventory management from a functional activity into a source of sustained organizational performance. Practically, the study offers valuable implications for managers and policymakers. For SMEs in Oman's logistics sector, investing in inventory management training, digital systems integration, and knowledge sharing mechanisms is essential to improve operational responsiveness and cost efficiency. Policymakers should also consider supporting capacity-building programs and technology adoption initiatives that strengthen IMK within the SME ecosystem. In conclusion, the results reaffirm that the synergy between strategic inventory practices and managerial knowledge forms the foundation for enhanced organizational performance. Strengthening both technological and human capabilities will be vital for Omani logistics SMEs to sustain growth, achieve operational excellence, and contribute effectively to the nation's Vision 2040 objectives.

5.1 Recommendations for Future Research

While this study provides significant insights into the effects of SIM and IMK on OP among logistics SMEs in Oman, several areas warrant further investigation. Future research could expand the model by incorporating additional moderating variables such as technological readiness, digital transformation maturity, or leadership capability to better explain performance outcomes. Comparative studies across different sectors or GCC countries could also enhance generalizability and uncover contextual variations in the SIM-IMK-OP relationship. Moreover, longitudinal designs would provide stronger causal evidence of how strategic inventory initiatives and knowledge management evolve over time to influence firm performance. Qualitative approaches, such as interviews or case studies could complement quantitative findings by exploring the behavioral and cultural dimensions of inventory management practices. Finally, researchers are encouraged to examine the role of sustainability and green logistics practices in shaping inventory strategies, particularly as global supply chains shift towards environmentally responsible operations.

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