

The Impact of Knowledge Management on Supply Chain Performance Through Performance Management Systems: Evidence from Jordanian Firms

Diaa Ali Suliman Alkhresheh

College of Graduate Studies, Mutah University
dia.khresheh@mutah.edu.jo, Diaaliali@yahoo.com

Abstract. This study examines how knowledge management (KM) practices influence supply chain performance (SCP) through the mediating role of performance management systems (PMS) among Jordanian firms. It addresses the strategic need for organizations in emerging economies to strengthen responsiveness and competitiveness through improved knowledge integration and performance control. Drawing on the Knowledge-Based View (KBV) and Resource-Based View (RBV), the research develops and empirically tests a structural model that links KM, PMS, and SCP within manufacturing, retail, and pharmaceutical sectors. Data were collected from 366 senior managers across Jordan and analyzed using partial least squares structural equation modeling (PLS-SEM) and multi-group analysis (MGA).

Empirical results confirm that KM positively influences both PMS and SCP, while PMS partially mediates the KM–SCP relationship. The findings highlight that firms with effective knowledge-sharing, learning, and monitoring mechanisms achieve superior supply-chain outcomes, particularly large and pharmaceutical firms where regulatory and technological capabilities reinforce KM–PMS integration.

This study contributes theoretically by extending the KBV through empirical validation of PMS as a mediating mechanism, and practically by demonstrating how digital knowledge systems and performance dashboards can enhance operational agility and resilience in resource-constrained environments.

Keywords: knowledge integration; supply-chain analytics; performance systems; PLS-SEM; emerging economies; Jordan

1. Introduction

Supply chains in emerging economies face persistent challenges arising from institutional fragility, limited ICT infrastructure, and fluctuating market conditions. In Jordan, firms operating across manufacturing, retail, and pharmaceutical sectors must navigate these complexities while striving to sustain competitive advantage. Within this context, the strategic integration of knowledge management (KM) and performance management systems (PMS) has become increasingly critical. KM practices—encompassing knowledge creation, sharing, and application—facilitate coordination, innovation, and adaptive learning, while PMS frameworks translate strategic objectives into operational metrics. Together, they enable firms not only to generate knowledge but also to systematically deploy it to achieve measurable performance outcomes.

Although a substantial body of research underscores the organizational advantages of KM (Pu & Qiao, 2025) and PMS (Centobelli et al., 2025) in enhancing operational efficiency, collaboration, and innovation, empirical studies rarely examine how these systems interact to influence supply chain performance (SCP). This gap is particularly salient in resource-constrained settings such as Jordan, where firms often operate with fragmented information systems and limited analytical capacity. Existing studies largely address KM and PMS as separate constructs, leaving their interdependence and joint contribution to SCP underexplored. Addressing this deficiency, the present study investigates a large and diverse sample of 366 organizations located in major Jordanian economic hubs—including Amman, Irbid, Zarqa, and Aqaba—to provide robust, context-specific evidence.

Accordingly, this study seeks to answer the following research question: How do knowledge management practices influence supply chain performance both directly and indirectly through performance management systems, and how do these relationships vary across firm size and industry in Jordan?

To address this question, five hypotheses are proposed, grounded in the Resource-Based View (RBV) and Knowledge-Based View (KBV):

- H1: Knowledge management practices positively influence performance management systems.
- H2: Performance management systems positively influence supply chain performance.
- H3: Knowledge management practices directly improve supply chain performance.
- H4: Performance management systems mediate the relationship between knowledge management and supply chain performance.
- H5: The effects of knowledge management on PMS and SCP differ significantly by firm size and industry.

To empirically test these relationships, a cross-sectional survey design was adopted, capturing data from organizations across key Jordanian industrial regions. Structural equation modeling (PLS-SEM) and multi-group analysis (MGA) were employed to examine both direct and indirect effects and to assess variations across organizational settings.

This study makes three key contributions. Theoretically, it extends the RBV and KBV by demonstrating the mediating role of PMS in transforming knowledge resources into performance outcomes. Methodologically, it provides large-sample empirical evidence from an emerging-market context, applying robust analytical tools to uncover firm-level heterogeneity. Practically, it identifies how organizational size and sectoral characteristics shape the effectiveness of KM–PMS integration, offering actionable insights for managers seeking to enhance supply-chain resilience and competitiveness.

The remainder of the paper is structured as follows. Section 2 presents the literature review and hypothesis development. Section 3 details the research methodology and analytical procedures. Section 4 reports and interprets the empirical results, while Section 5 discusses theoretical and practical implications. Section 6 concludes with key findings, recommendations, and directions for future research.

2. Literature review

2.1. Knowledge Management and Supply Chain Learning

In an increasingly turbulent and digitally connected global environment, effective supply chain management (SCM) depends on the firm's ability to harness organizational knowledge, implement data-driven decision-making, and enhance operational agility. As competition intensifies—especially in emerging economies—knowledge management (KM) has become a cornerstone capability for maintaining efficiency, flexibility, and innovation (Adams et al., 2021; Morshed et al., 2024). Knowledge serves as both a strategic resource and a dynamic mechanism for coordinating processes and responding to market uncertainty. When the knowledge is properly captured, shared, and utilized, then the firm is able to foresee disruptions, better coordinate with suppliers, and harden supply-chain responsiveness (Pu & Qiao, 2025; Syed et al., 2024).

KM functions—knowledge application, sharing, storage, and creation—cover the full supply-chain cycle, including forecasting and purchasing all the way to supply chain coordination, as well as development of suppliers (Ashal & Morshed, 2024; Quttainah et al., 2025). There is empirical evidence to show time and time again that companies utilizing formal KM practices have better supply chain integration, operational efficiency, and better innovations (Hu et al., 2024; Mahboub & Ghanem, 2024). These are manifested most prominently when KM practices are institutionalized among departments so communication runs in real time and decisions are made jointly.

KM's role is even greater in emerging economies where institutional systems are fragile, politically unstable, and infrastructural, all working to impede supply-chain efficiency (Broccardo et al., 2025; Thomas, 2024). In Jordan, poor ICT infrastructure, costly energy, and ambiguous supply conditions from the region contribute to operational risk. Nevertheless, even small-corner actions on knowledge sharing have been revealed to greatly augment adaptability, forecasting accuracy, and strategic planning coordination (Marjerison et al., 2022; Rialti et al., 2020).

The dynamic capabilities approach stresses that firms need to constantly sense, seize, and reposition knowledge resources in order to accommodate environmental changes (Hashem & Aboelmaged, 2024). KM becomes the basis for fast reconfiguration of resources and adaptive learning. Knowledge capital assists decisions under uncertainty so that companies are able to dynamically adjust the logistics activities and the relationship with suppliers. demonstrated that companies with combined internal and external flows of knowledge were able to divert shipping during transport blockades more successfully, showing how the knowledge is behaving like an operational buffer during emergencies (G. Zhao et al., 2021).

Altogether, these results confirm that KM is not only an information repository but also an evolutionary capability underpinning supply chain resilience as well as supply chain innovation. It is only by itself that knowledge does not indirectly imply performance enhancement but by itself is systematically measured by linking to strategic objectives—a linkage enabled by Performance Management Systems (PMS).

2.2. Performance Management Systems in Supply Chains

As KM is concerned with acquiring and utilizing knowledge, Performance Management Systems (PMS) offer the frameworks for structures to analyze and track that knowledge. PMS transpose

strategic ambitions into performance measures, generating accountability and making sure learning is translated into measurable outcomes (Qureshi, 2022; Sartori et al., 2022). In supply chains, PMS models frequently include financial indicators like cost per order, procurement spending, and stock rotation, alongside delivery reliability, lead time, and customer satisfaction as the non-financial metrics (Salhab et al., 2025). These performance indicators enable companies to track processes, benchmark efficiency, and determine if knowledge-based activities generate quantifiable value.

Even though their application is common in industrial economies, PMS adoption is patchy among emerging markets. Jordanian companies, especially small and medium-sized companies (SMEs) and government institutions, are confronted by disparate data systems, by-hand records, and the lack of up-to-date analytics (Marelli & Dello Sbarba, 2024). However, research contends that where PMS are properly implemented, they provide disruptive operational enhancements. Revealed that Jordanian retail companies that employed PMS had their stock rotation enhanced coupled with reduced stockouts, whereas their manufacturing counterparts had their productions streamlined coupled with enhanced product quality (Centobelli et al., 2025).

Notably, PMS are not closed-off systems. Their performance is improved by the infusion of PMS with knowledge flows and learning feedbacks. The inclusion of KM in PMS guarantees that performance measures account for dynamic learning instead of rigid metrics (Centobelli et al., 2019). KM-integrated PMS allow for the improvement cycle to run continually, with the impetus provided by timely interventions from the information coming in real-time. Jordanian food-processing companies' evidence reveals that unified KM–PMS models cut waste during business operations as well as beef up safety compliance (Butler et al., 2008; Viberg et al., 2023). The interaction supports the thesis that performance systems informed by knowledge convert information into intelligence capable of informing action—a key driver of competitiveness amidst turbulent markets.

From a conceptual perspective, PMS offer the architecture of control that makes knowledge-based strategies operational. Without PMS, knowledge is tacit and measurable only; without KM, PMS do not have the informational breadth to innovate and adapt. Their conjunction therefore becomes the dual engine for performance excellence. As business entities come under increased demands for openness and data-based accountability, the interdependence between KM and PMS becomes key to supply-chain competitiveness.

2.3. Integration of KM and PMS for Supply Chain Performance

The alignment of KM and PMS is increasingly viewed as a determining driver of Supply Chain Performance (SCP), including operational effectiveness, responsiveness, and service level (Martínez-Falcó et al., 2024). International studies point out that performance benefits are usually reaped not only by investing in technologies but also by utilizing improved knowledge utilization and inter-organizational coordination (Morshed et al., 2024). In emerging markets like Jordan, where resources and digital infrastructure are scarce, mechanisms that are driven by knowledge tend to substitute capital-based technologies, generating equivalent supply-chain efficiency benefits.

There is empirical evidence that has always demonstrated KM and PMS together result in better SCP performance. Established that the integration of KM enabled by ICT increased delivery efficiency and enhanced flexibility of production (Coşkun & Erturgut, 2024).

An increasing body of studies finds PMS to be acting as the mediator between the KM–SCP link. performance is solely marginally affected by the sharing of knowledge unless complemented by properly structured monitoring and evaluation frameworks (W. Zhao et al., 2025).

Nevertheless, the relationships are not consistent throughout firms. contextual variations—company size, industry, and ownership type—determine the direction and intensity of the KM–PMS–SCP nexus. Cheah et al. (2023) point out that SMEs consequently benefit proportionally more from the adoption

of KM by virtue of their flat structures and rapid decision cycles. Mohanty et al. (2024) contribute that large corporations, however, enjoy sophisticated PMS infrastructure but risk inward silos and bureaucratic statics impeding the diffusion of knowledge. In Jordan, the underperformance of the public sector is characterized by rigid structures and legacy infrastructure, whereas the maturity level is high among the private sector, export-oriented business firms. The sectoral and organizational discrepancies justify the introduction of firm size as well as industry as the moderator variables of the current study.

From a theoretical standpoint, these interconnections are best explained through the Knowledge-Based View (KBV) and Resource-Based View (RBV) of the firm. The KBV conceptualizes knowledge as the primary intangible asset driving learning, innovation, and adaptation (Hong et al., 2019). The RBV, in turn, emphasizes that competitive advantage stems from the possession and strategic alignment of valuable, rare, inimitable, and non-substitutable resources (Asiaei et al., 2021). When integrated, these theories explain how PMS operationalize knowledge—transforming it from a potential resource (as envisioned by KBV) into a realized capability (as defined by RBV). In emerging markets, such integration becomes particularly crucial, as knowledge and measurement systems together compensate for limited financial or technological assets (Al-Muntasir, 2022).

2.4. Synthesis and Hypotheses Development

Synthesizing these perspectives, the literature reveals three dominant insights.

First, KM provides the cognitive foundation for learning and responsiveness, but without PMS, knowledge remains underutilized.

Second, PMS provide the measurement and feedback architecture necessary to convert knowledge into performance improvement.

Third, the combined influence of KM and PMS on SCP is contingent on contextual factors such as industry and firm size, which shape how knowledge and control systems are institutionalized.

Despite strong conceptual and empirical support for the individual roles of KM and PMS, limited research has tested their joint mechanisms within a single structural model in emerging economies. The absence of such integration in current literature represents a significant theoretical gap. Most existing studies analyze KM or PMS in isolation, neglecting their dynamic interdependence and mediating pathways. Furthermore, cross-sectional evidence from Jordan remains scarce, even though the country represents a typical emerging-market context characterized by institutional fragmentation and evolving digital infrastructure.

To address this gap, the current study builds on KBV and RBV to propose an integrated conceptual framework (Figure 1) where KM enhances SCP both directly and indirectly through PMS. This framework positions PMS as the mediating mechanism that transforms knowledge resources into measurable operational outcomes, while firm size and industry act as moderators influencing the magnitude of these relationships.

Hypotheses

- **H1:** Knowledge Management practices positively influence Performance Management Systems.
- **H2:** Performance Management Systems positively influence Supply Chain Performance.
- **H3:** Knowledge Management practices positively influence Supply Chain Performance.
- **H4:** Performance Management Systems mediate the relationship between Knowledge Management and Supply Chain Performance.

- **H5:** The effects of Knowledge Management on PMS and SCP differ significantly across firm size and industry.

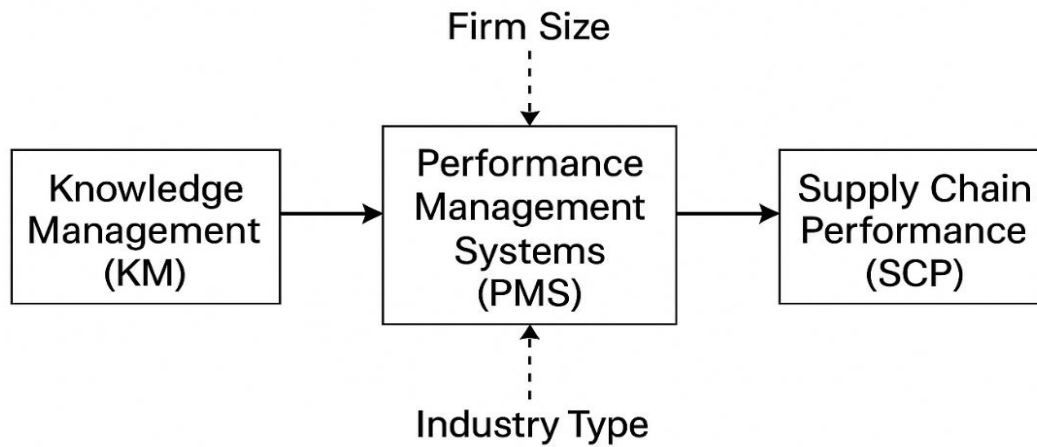


Fig1. Conceptual Framework

3. Methodology

This work examines the relationship between Knowledge Management (KM) practices, both direct and indirect through Performance Management Systems (PMS), and Supply Chain Performance (SCP), on Jordanian companies. The cross-sectional survey design was implemented to take one snapshot, not only capturing the level of KM–PMS integration but also across different organizational settings. The cross-sectional survey design enables the study of firm-level practices one point in time, thus capturing the current status of the state of knowledge and performance systems as it exists under pragmatic circumstances.

3.1. Theoretical Foundation and Conceptual Framework

The research is based on the Knowledge-Based View (KBV) and the Resource-Based View (RBV). The KBV frames knowledge as an important intangible asset improving innovation, coordination, and adaptability, while the RBV stresses that performance systems are valuable and imitable resources supporting long-term competitiveness (Morshed, 2025b). Drawing on these lenses, the conceptual framework (Figure 1) analyzes the direct, indirect, and moderation connections between KM, PMS, and SCP. Under this framework, PMS interfere the connection between KM and SCP, whereas firm size and industry type regulate the same linkages.

3.2. Population and Sampling Design

To ensure representation across different organizational types, a stratified random sampling procedure was employed. Firms were categorized by size (small, medium, large), industry sector (manufacturing, retail, pharmaceutical, etc.), and supply-chain complexity (local vs. global operations). Stratification ensured heterogeneity and improved generalizability given Jordan's diverse business landscape and variation in system maturity. Firms were drawn from key economic regions including Amman, Irbid, Zarqa, Aqaba, and other governorates (Morshed, 2025c).

Data were collected through a structured questionnaire administered in both English and Arabic to enhance clarity and inclusivity across managerial profiles. The instrument was adapted from validated scales in prior research and included items measuring:

- *KM*: knowledge creation, sharing, and application.
- *PMS*: design, monitoring, and use (e.g., KPIs, Balanced Scorecard).
- *SCP*: delivery accuracy, responsiveness, and cost efficiency.

Responses were recorded on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). A pilot test with 35 managers in August 2024 confirmed item reliability and linguistic clarity, leading to minor refinements.

The final survey was distributed electronically via Google Forms, SurveyMonkey, and Qualtrics between February and April 2025. Of 481 targeted firms, 366 valid responses were obtained, yielding a 76% response rate. Table 1 summarizes the distribution of firms by region, size, industry, and supply-chain type, demonstrating broad coverage across the Jordanian economy.

Table 1. Sample Distribution by Region, Firm Size, Industry Sector, and Supply-Chain Complexity

Stratum	Category	Target Sample	Actual Responses (76%)
Region (Jordan)	Amman	250	190
	Irbid	80	61
	Zarqa	70	53
	Aqaba	50	38
	Other Regions	31	24
Firm Size	Small Enterprises	200	152
	Medium Enterprises	150	114
	Large Enterprises	131	100
Industry Sector	Manufacturing	75	57
	Retail	80	61
	Pharmaceuticals	50	38
	Agriculture	65	49
	Real Estate & Construction	80	61
	Finance	50	38
	Healthcare	65	49
	Tourism	65	49
	Other	66	50
Supply Chain Type	Local Supply Chains	240	182
	Global Supply Chains	241	184
Total	—	481	366

This sample structure provides a robust basis for multi-group analysis (MGA), enabling comparative examination of KM–PMS–SCP linkages across firm characteristics.

3.3. Measurement and Construct Validation

All measurement items were adapted from validated instruments to ensure construct validity. KM items were driven from PMS. The instrument captured managerial perceptions of how knowledge and performance systems contribute to supply-chain outcomes. Table 2 provides an overview of constructs, their sources, and reliability measures (Cronbach's α and composite reliability > 0.70 ; AVE > 0.50).

Composite Reliability (CR) and *Average Variance Extracted (AVE)* were computed to assess internal consistency and convergent validity. *Discriminant validity* was verified using the Fornell–Larcker criterion and HTMT ratios (< 0.85), confirming distinctiveness among constructs (Morshed, 2025a).

3.4. Data Analysis Procedure

Data analysis was performed using SmartPLS 4.0 (Morshed & Khrais, 2025), suitable for complex, multi-path models with latent variables and non-normal data. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to estimate direct and indirect relationships between constructs. The method is especially appropriate for small-to-medium sample sizes typical in emerging economies and for theory extension rather than theory confirmation. Bootstrapping with 5,000 resamples was conducted to obtain t-values and confidence intervals for hypothesis testing.

To evaluate common-method bias (CMB), Harman's single-factor test was performed. The first factor accounted for 34% of total variance, below the 50% threshold, indicating limited bias. Variance Inflation Factor (VIF) values for all indicators were below 3.5, further confirming absence of multicollinearity. Data normality was verified via skewness and kurtosis statistics within ± 2 , consistent with recommended thresholds for PLS-SEM.

3.5. Multi-Group Analysis (MGA)

Multi-Group Analysis was applied to examine whether the relationships among KM, PMS, and SCP differ significantly across firm size and industry sector. MGA allows comparison of path coefficients between groups to test for structural invariance. This approach is appropriate given known disparities in resource capabilities and system sophistication between large firms and SMEs in Jordan (Morshed, 2024). Using permutation-based testing to evaluate significant differences ($p < 0.05$). Findings from MGA provide insights into how contextual variables shape the effectiveness of KM–PMS integration.

3.6. Statistical Model Specification

This study applies Partial Least Squares Structural Equation Modeling (PLS-SEM) using *SmartPLS 4* to test direct, indirect, and moderating effects among KM, PMS, and SCP. PLS-SEM is appropriate for predictive, non-normal, and medium-sample data typical of emerging-market contexts.

The measurement model estimated reflective constructs through factor loadings ($\lambda \geq 0.70$) and tested reliability (Cronbach's $\alpha \geq 0.70$; CR ≥ 0.70) and validity (AVE ≥ 0.50 ; Fornell–Larcker; HTMT ≤ 0.85).

The structural model was expressed as:

$$PMS = \beta_1(KM) + \zeta_1; SCP = \beta_2(PMS) + \beta_3(KM) + \zeta_2$$

with mediation via $KM \rightarrow PMS \rightarrow SCP$ evaluated using 5,000-sample bootstrapping.

Model adequacy was assessed by $SRMR \leq 0.08$, $R^2 \geq 0.25$, $f^2 \geq 0.15$, and $Q^2 > 0$ for predictive relevance. Multi-Group Analysis (MGA) tested moderating effects of firm size and industry through permutation tests ($p < 0.05$). Common-method bias was checked by Harman's one-factor test ($< 50\%$) and VIF < 3.3 , confirming negligible bias and data suitability.

4. Results

4.1. Descriptive Statistics

The descriptive analysis reveals that Jordanian firms demonstrate consistently high engagement with knowledge management and performance management practices. Respondents show strong agreement that their organizations effectively create, share, and apply knowledge, supported by structured performance mechanisms. The mean values across all constructs are above 4.0 on a 5-point Likert scale, with low standard deviations, suggesting consensus among participants. Slightly negative skewness indicates a tendency toward agreement, and kurtosis values near 3 confirm approximate normality. Together, these results verify that the dataset is internally consistent and well suited for multivariate statistical techniques such as PLS-SEM (Proykratok et al., 2024).

Table 2. Descriptive Statistics of Key Constructs

Construct	Mean	SD	Skewness	Kurtosis
Knowledge Management (KM)	4.11	0.79	−0.21	2.54
Performance Management Systems (PMS)	4.03	0.82	−0.26	2.49
Supply Chain Performance (SCP)	4.19	0.85	−0.23	2.61

4.2. Measurement Model Evaluation

All constructs exhibit strong reliability and validity, confirming the robustness of the measurement model. Cronbach's Alpha and Composite Reliability values exceed 0.86 and 0.89 respectively, indicating high internal consistency. Average Variance Extracted (AVE) values above 0.60 demonstrate satisfactory convergent validity. Discriminant validity is established since the square roots of the AVE values surpass inter-construct correlations, and HTMT ratios remain below 0.85. Collectively, these indicators confirm that KM, PMS, and SCP are statistically sound and empirically distinct dimensions, ensuring that subsequent structural modeling is **reliable** (Kankoon & Amornsawadwatana, 2024).

Table 3. Measurement Model Evaluation (Reliability, Convergent and Discriminant Validity)

Construct	$\alpha (\geq 0.70)$	CR (≥ 0.70)	AVE (≥ 0.50)	$\sqrt{AVE}$	Max HTMT (≤ 0.85)
KM	0.88	0.90	0.65	0.81	0.74
PMS	0.86	0.89	0.61	0.78	0.74
SCP	0.89	0.91	0.66	0.81	0.70

4.3. Structural Model and Hypothesis Testing

The structural model supports all hypothesized relationships. Knowledge Management (KM) significantly enhances Performance Management Systems (PMS) ($\beta = 0.47$, $p < 0.001$), confirming that effective knowledge creation and dissemination foster the institutionalization of structured performance systems. PMS strongly predicts Supply Chain Performance (SCP) ($\beta = 0.44$, $p < 0.001$), emphasizing that formalized performance monitoring mechanisms translate knowledge into operational improvement. KM also directly influences SCP ($\beta = 0.38$, $p = 0.001$), while PMS partially mediates this effect ($\beta = 0.21$, $p = 0.004$). These findings validate the integrated conceptual model derived from the Knowledge-Based View (KBV) and Resource-Based View (RBV), illustrating that

both KM and PMS act as strategic, complementary resources that strengthen supply-chain competitiveness (Jreissat et al., 2024; Wijayanti et al., 2024).

Table 4. Structural Paths and Hypotheses

Hypothesis	Path	B	T	p
H ₁	KM → PMS	0.47	4.12	<0.001
H ₂	PMS → SCP	0.44	3.78	<0.001
H ₃	KM → SCP	0.38	3.34	0.001
H ₄	KM → SCP (Indirect via PMS)	0.21	2.89	0.004

4.4. Model Quality and Predictive Power

The model demonstrates strong explanatory and predictive ability. It accounts for 62 percent of the variance in PMS ($R^2 = 0.62$) and 57 percent in SCP ($R^2 = 0.57$), indicating substantial explanatory power. Effect sizes ($f^2 = 0.17\text{--}0.28$) range from medium to large, and positive Q^2 values (0.34 for PMS and 0.29 for SCP) confirm predictive relevance. The Standardized Root Mean Square Residual (SRMR) value of 0.049 indicates an excellent overall fit. Collectively, these metrics confirm that the model is both statistically robust and theoretically grounded, capturing meaningful variance and predictive strength (Morshed, 2024a).

Table 5. Model Quality Indices (Fit, Explanatory Power, Effect Size, Predictive Relevance)

Index	PMS	SCP	Notes / Thresholds
R^2	0.62	0.57	Substantial explanatory power
f^2	0.17–0.28	0.17–0.28	Medium to large effects
Q^2	0.34	0.29	Predictive relevance (>0)
SRMR	—	—	0.049 (Good fit ≤ 0.08)

4.5. Mediation Analysis

Bootstrapping and Sobel testing confirm that PMS partially mediates the KM–SCP relationship. Both the direct and indirect paths are significant, demonstrating that while knowledge management directly drives performance, its influence is amplified through structured performance systems such as KPIs and balanced scorecards. This mediation aligns with the KBV argument that knowledge generates value only when it is systematically captured, monitored, and converted into actionable metrics (Dahal et al., 2025).

Table 6. Mediation Summary

Path	Direct (β , p)	Indirect (β , p)	Total (β , p)	Sobel z, p	Mediation
KM → SCP (with PMS)	0.22, 0.008	0.20, 0.004	0.42, 0.002	2.85, 0.004	Partial

3.7. Group Heterogeneity: Firm Size and Industry

The multi-group and moderation analyses reveal notable differences across firm sizes and industries. Large enterprises and pharmaceutical firms show the strongest KM–PMS–SCP relationships,

reflecting resource maturity, regulatory discipline, and data infrastructure. SMEs, although benefiting from KM initiatives, display weaker structural linkages, likely due to informality and limited analytical capacity. Significant interaction effects ($\beta_{\text{size}} = 0.12$, $p = 0.048$; $\beta_{\text{industry}} = 0.15$, $p = 0.032$) confirm that firm size and industry context moderate the overall framework. These results reinforce RBV logic, where firms with superior resources and compliance-driven routines achieve stronger performance outcomes through integrated knowledge and performance systems (Sardjono et al., 2024).

Table 7. Multi-Group and Moderation Summary (Firm Size and Industry)

Path	Small (β , p)	Medium (β , p)	Large (β , p)	p-diff (Size)	Manufacturing (β , p)	Retail (β , p)	Pharma (β , p)	p-diff (Industry)
KM $\rightarrow$ PMS	0.39, 0.005	0.50, 0.002	0.58, <0.001	0.043	0.45, 0.002	0.39, 0.008	0.54, 0.001	0.036
PMS $\rightarrow$ SCP	0.36, 0.007	0.45, 0.003	0.51, 0.001	0.038	0.46, 0.003	0.41, 0.004	0.52, 0.002	0.028
KM $\rightarrow$ SCP (Direct)	0.31, 0.008	0.40, 0.004	0.46, 0.002	0.041	0.38, 0.006	0.36, 0.007	0.47, 0.003	0.044
KM $\rightarrow$ SCP (Indirect via PMS)	0.18, 0.014	0.22, 0.007	0.29, 0.002	0.049	—	—	—	—

4.6. Interpretive Synthesis

Overall, the findings confirm that KM is a decisive organizational capability that enhances supply-chain performance both directly and through PMS. PMS acts as a knowledge-utilization mechanism, translating intangible know-how into measurable operational outcomes such as cost efficiency, delivery accuracy, and responsiveness. From a KBV standpoint, knowledge provides the foundation for learning and innovation, while from an RBV perspective, PMS operationalizes that knowledge into rare and inimitable routines that sustain competitive advantage. The partial mediation and significant moderating effects underscore that synergy between KM and PMS—rather than either mechanism alone—drives superior supply-chain performance in Jordan's emerging market context.

5. Discussion

The result from this research presents strong empirical evidence for the theoretical arguments of the Knowledge-Based View (KBV) and Resource-Based View (RBV), validating and expanding previous studies on knowledge-based supply chain management. The significantly positive influence of Performance Management Systems (PMS) by Knowledge Management (KM) reveals that the adoption by organizations of spending on knowledge creation, dissemination, and implementation makes them better placed to construct formulated performance monitoring structures. This is congruent with Centobelli et al. (2019) and Sartori et al. (2022), who also validated the establishment of systematic performance measures as dependent on knowledge-based capabilities for translating strategic intentions into operational performance. From the Resource-Based View perspective, PMS is an inimitable internal capability by which companies transform intangible knowledge resources into quantifiable performance benefits.

The direct effect of KM on Supply Chain Performance (SCP) is consistent with existing research highlighting that efficiency is improved by effective knowledge flows, along with improved coordination with suppliers, and adaptability in supply chains of emerging markets (Ashal & Morshed, 2024; Mahboub & Ghanem, 2024). In Jordan—whose ICT capacity and logistics infrastructure are still limited—these results support the claims of Alkhatib & Momani (2023), and Ramadan & Morshed (2024), that noted even limited knowledge-spilling activities greatly enhanced forecasting, adaptability, and service provision. From the KBV perspective, this highlights that the access to, and utilization of, knowledge as an alternative to capital-based resources becomes the means by which companies develop operational resilience amid institutional and environmental uncertainty.

The notable PMS–SCP connection supports previous work revealing that performance management systems ensure the realization of strategy into physical results, especially where resources are scarce (Ali & Morshed, 2024; Salhab et al., 2025). PMS is thereby registered as a transverse capability—a framework for regularly aligning inward-facing processes with the external supply chain goal. In the Jordanian case, PMS empowers companies to manage their stocks optimally, better their delivery precision, as well as sustain service consistencies amidst fluctuating market dynamics.

Importantly, the partial mediation role played by PMS between KM and SCP proves that performance is not automatically better through the possession of knowledge; rather, only when incorporated into systematic evaluation structures does the full potential of knowledge manifest. This resonates with Mpuon et al. (2024), whose discovery established that performance systems transform measurable resources out of knowledge. As such, KM's interaction with PMS presents a transformation mechanism of resources, where assets based on knowledge are translated into capability dynamics influencing SCP.

Multi-group and moderation analyses extend this insight by showing that big firms and pharma firms have the most powerful KM–PMS–SCP connections. These variations justify the claims by Kusa et al. (2024), whose work revealed that organizational size, formalization, and regulation intensification intensify the intensification of KM–PMS success. Bigger firms enjoy formalized ICT frameworks and data analytics functions, while the pharmaceutical industry's level of regulation dictates the need for timely knowledge records and uncompromising performance compliance. These contextual overlaps imply that firm size and industry maturity qualify how KM and PMS generate SCP—a result particularly poignant amidst the diverse business environment of Jordan.

Together, the findings empirically verify the complementarity of KM and PMS as strategic resources that collectively underpin supply chain competitiveness. The research supports RBV and KBV by showing that performance-based resources (KM) and performance-based systems (PMS) function not autarkically but together as complementing resources that reinforce supply chain capability dynamism. In addition, by analyzing cross-firm differences under the condition of resources, the study provides region-specific evidence globally to the SCM body, filling an empirical void that has long existed for the Middle East.

6. Implications

6.1. Managerial Implications

For organizational leaders, the findings reveal that KM initiatives yield limited benefit if decoupled from performance tracking mechanisms. Managers should therefore align knowledge flows with explicit performance metrics, linking supplier insights, innovation outcomes, and process improvements with KPIs and dashboards. Larger firms can leverage their ICT infrastructures to integrate knowledge repositories and performance analytics, enabling real-time feedback and decision-making. In contrast, SMEs can pursue phased adoption—starting with simplified PMS

modules and internal knowledge-sharing programs—to achieve incremental performance gains within financial and human resource limits.

6.2. Policy Implications

At the policy level, the results highlight the need for institutional support and digital capacity-building that fosters KM–PMS integration across industries. Policymakers can facilitate this by offering subsidized ICT training, developing national knowledge platforms, and issuing sector-specific performance benchmarking frameworks. Such initiatives would allow Jordanian firms to align their internal performance systems with global supply chain standards, thereby improving export competitiveness and compliance readiness in regulated sectors like pharmaceuticals and manufacturing.

6.3. Theoretical and Research Implications

Theoretically, this study advances the RBV and KBV by conceptualizing PMS as a conversion mechanism through which knowledge resources are transformed into operational performance. This mediating role redefines PMS as a dynamic capability that enables firms to institutionalize learning and adaptability. Future research can extend this by incorporating variables such as digital maturity, cultural orientation, or institutional pressure as moderators, or by employing longitudinal designs to trace causality over time. Comparative studies across other emerging economies could also test the model’s generalizability and reveal cross-country differences in the KM–PMS–SCP nexus.

7. Conclusion

This study set out to empirically examine how Knowledge Management (KM) practices influence Supply Chain Performance (SCP) both directly and through the mediating role of Performance Management Systems (PMS), using comprehensive evidence from Jordanian firms. By integrating these constructs within a unified analytical framework, the study addresses a long-standing gap in the literature—where most research on emerging markets has examined KM and PMS in isolation or failed to capture their synergistic contribution to supply chain competitiveness under institutional and resource constraints.

The study’s novelty lies in its methodological and theoretical integration. Through the application of Partial Least Squares Structural Equation Modeling (PLS-SEM), multi-group analysis (MGA), and formal mediation testing, it quantifies both the direct and indirect effects of KM on SCP while uncovering firm-level and sectoral variations. The results show that KM enhances SCP not only by facilitating knowledge creation and dissemination but also by strengthening PMS, which acts as a mediating capability that translates knowledge into measurable operational outcomes. These effects are especially pronounced in large enterprises and regulated industries such as pharmaceuticals, where formal systems and compliance requirements amplify the benefits of KM–PMS alignment. The findings thereby extend the Knowledge-Based View (KBV) and Resource-Based View (RBV) by demonstrating that superior supply chain outcomes emerge from the integration of intangible knowledge assets with structured performance mechanisms.

Although the research is bounded by its cross-sectional design and national focus, these limitations do not detract from its contribution. Instead, they highlight opportunities for further research through longitudinal or comparative analyses. Future work could employ real-time analytics to capture dynamic learning and performance cycles or compare findings across other MENA economies to assess how institutional maturity, digital readiness, and regulatory conditions influence the KM–PMS–SCP nexus.

Strategic and Policy Implications

Key implications derived from the findings include:

- **Managerial:** Firms must align KM initiatives with PMS frameworks to ensure that knowledge creation and sharing are systematically translated into measurable operational improvements.
- **Large Firms and Regulated Industries:** These organizations can leverage existing infrastructures to deepen KM–PMS integration, fostering agility, compliance, and innovation-driven competitiveness.
- **SMEs:** Resource-limited firms should adopt scalable and phased KM–PMS practices—such as simplified dashboards and selective knowledge repositories—to gradually build internal capabilities.
- **Policy-Level:** Policymakers and industry associations should promote capacity-building initiatives, digital training programs, and knowledge-sharing networks to accelerate organizational learning and performance benchmarking, especially for SMEs.

In essence, this study demonstrates that the integration of KM and PMS is not merely complementary but foundational to achieving supply chain agility, efficiency, and resilience in emerging markets. By institutionalizing knowledge within performance systems, organizations can transform learning into lasting competitive advantage—an imperative for sustaining performance amid volatility and institutional fragility.

References

- Adams, D., Donovan, J., & Topple, C. (2021). Achieving sustainability in food manufacturing operations and their supply chains: Key insights from a systematic literature review. *Sustainable Production and Consumption*, 28, 1491–1499.
- Ali, H., & Morshed, A. (2024). Augmented reality integration in Jordanian fast-food apps: Enhancing brand identity and customer interaction amidst digital transformation. *Journal of Infrastructure, Policy and Development*, 8(5), 3856.
- Alkhatib, S. F., & Momani, R. A. (2023). Supply chain resilience and operational performance: The role of digital technologies in jordanian manufacturing firms. *Administrative Sciences*, 13(2), 40.
- Al-Muntasir, M. (2022). The phenomenon of information flow from traditional and new media about the corona pandemic from the perspective of newly graduated media professionals in Yemen. *Middle East Journal of Communication Sciences*, 2(2), 1.
- Ashal, N., & Morshed, A. (2024). Balancing data-driven insights and human judgment in supply chain management: The role of business intelligence, big data analytics, and artificial intelligence. *Journal of Infrastructure, Policy and Development*, 8(6), 3941.
- Asiaei, K., Rezaee, Z., Bontis, N., Barani, O., & Sapiei, N. S. (2021). Knowledge assets, capabilities and performance measurement systems: A resource orchestration theory approach. *Journal of Knowledge Management*, 25(8), 1947–1976.
- Broccardo, L., Giordino, D., Yaqub, M. Z., & Alshibani, S. M. (2025). Implementing sustainability: WHAT role do knowledge management and management accounting play? AGENDA for environmentally friendly businesses. *Corporate Social Responsibility and Environmental Management*, 32(1), 383–403. <https://doi.org/10.1002/csr.2936>
- Butler, T., Feller, J., Pope, A., Emerson, B., & Murphy, C. (2008). Designing a core IT artefact for Knowledge Management Systems using participatory action research in a government and a non-government organisation. *The Journal of Strategic Information Systems*, 17(4), 249–267.

- Centobelli, P., Cerchione, R., Oropallo, E., Papa, A., & Palermo, S. (2025). Digital knowledge management in agile self-tuning organisations: A multiple case study. *Journal of Knowledge Management*, 29(1), 222–246.
- Centobelli, P., Cerchione, R., & Singh, R. (2019). The impact of leanness and innovativeness on environmental and financial performance: Insights from Indian SMEs. *International Journal of Production Economics*, 212, 111–124.
- Cheah, J.-H., Magno, F., & Cassia, F. (2023). Reviewing the SmartPLS 4 software: The latest features and enhancements. *Journal of Marketing Analytics*, s41270-023-00266-y. <https://doi.org/10.1057/s41270-023-00266-y>
- Coşkun, A. E., & Erturgut, R. (2024). How do uncertainties affect supply-chain resilience? The moderating role of information sharing for sustainable supply-chain management. *Sustainability*, 16(1), 131.
- Dahal, R. K., Sharma, D. R., Subedi, S., & Joshi, S. P. (2025). Leading from a distance: How emotional intelligence, trust, training, and core beliefs drive virtual leadership effectiveness. *Journal of Logistics, Informatics and Service Science*, 12(2), 1–25.
- Hashem, G., & Aboelmaged, M. (2024). The dynamic interplay of knowledge management, innovation and learning capabilities in digital supply chain adoption: A mediation-moderation model. *Benchmarking: An International Journal*. <https://www.emerald.com/insight/content/doi/10.1108/BIJ-04-2023-0235/full/html>
- Hong, Y., Wu, T., Zeng, X., Wang, Y., Yang, W., & Pan, Z. (2019). Knowledge-based open performance measurement system (KBO-PMS) for a garment product development process in big data environment. *IEEE Access*, 7, 129910–129929.
- Hu, Q., Adam, H., Desai, S., & Mo, S. (2024). Turning a Blind Eye to Team Members' Unethical Behavior: The Role of Reward Systems. *Journal of Business Ethics*, 194(2), 297–316. <https://doi.org/10.1007/s10551-023-05598-4>
- Jreissat, E. R., Khrais, L. T., Salhab, H., Ali, H., Morshed, A., & Dahbour, S. (2024). An In-Depth Analysis of Consumer Preferences, Behavior Shifts, and Barriers Impacting IoT Adoption: Insights from Jordan's Telecom Industry'. *Applied Mathematics and Information Sciences*, 18(2), 271–281.
- Kankoon, S., & Amornsawadwatana, S. (2024). Inventory Management Strategies for Business Continuity: A Study of the Eyeglass Lens Industry During Global Crises. *Journal of Logistics, Informatics and Service Science*, 11 (12), 270–292.
- Kusa, R., Suder, M., & Duda, J. (2024). Role of entrepreneurial orientation, information management, and knowledge management in improving firm performance. *International Journal of Information Management*, 78, 102802.
- Mahboub, R., & Ghanem, M. G. (2024). The mediating role of knowledge management practices and balanced scorecard in the association between artificial intelligence and organization performance: Evidence from MENA region commercial banks. *Cogent Business & Management*, 11(1), 2404484. <https://doi.org/10.1080/23311975.2024.2404484>
- Marelli, A., & Dello Sbarba, A. (2024). Insights on the role of performance measurement systems in the digital servitization landscape: A longitudinal case study. *Qualitative Research in Accounting & Management*. <https://www.emerald.com/insight/content/doi/10.1108/QRAM-11-2022-0185/full/html>
- Marjerison, R. K., Andrews, M., & Kuan, G. (2022). Creating sustainable organizations through knowledge sharing and organizational agility: Empirical evidence from China. *Sustainability*, 14(8), 4531.

- Martínez-Falcó, J., Marco-Lajara, B., Zaragoza-Sáez, P., & Sánchez-García, E. (2024). The effect of knowledge management on sustainable performance: Evidence from the Spanish wine industry. *Knowledge Management Research & Practice*, 22(3), 298–313. <https://doi.org/10.1080/14778238.2023.2218045>
- Mohanty, A., Keswani, B., Mohanty, S. K., Mohapatra, A. G., Nayak, S., & Akhtar, M. M. (2024). Synergizing Knowledge Management in the Era of Industry 4.0: A Technological Revolution for Organizational Excellence. In R. Kumar, V. Jain, V. C. Ibarra, C. A. Talib, & V. Kukreja (Eds.), *Knowledge Management and Industry Revolution 4.0* (1st ed., pp. 39–85). Wiley. <https://doi.org/10.1002/9781394242641.ch3>
- Morshed, A. (2024a). Assessing the Economic Impact of IFRS Adoption on Financial Transparency and Growth in the Arab Gulf Countries. *Economies*, 12(8), 209.
- Morshed, A. (2024b). Evaluating the effects of IFRS 9 on Jordanian banks' credit and financial metrics. *Banks and Bank Systems*, 19(4), 70–83. [https://doi.org/10.21511/bbs.19\(4\).2024.06](https://doi.org/10.21511/bbs.19(4).2024.06)
- Morshed, A. (2025a). Cultural norms and ethical challenges in MENA accounting: The role of leadership and organizational climate. *International Journal of Ethics and Systems*. <https://www.emerald.com/insight/content/doi/10.1108/ijoes-08-2024-0247/full/html>
- Morshed, A. (2025b). Ethical challenges in designing sustainable business models for responsible consumption and production: Case studies from Jordan. *Management & Sustainability: An Arab Review*. <https://www.emerald.com/insight/content/doi/10.1108/msar-09-2024-0131/full/html>
- Morshed, A. (2025c). Sustainable energy revolution: Green finance as the key to the Arab Gulf States' future. *International Journal of Energy Sector Management*. <https://www.emerald.com/insight/content/doi/10.1108/IJESM-10-2024-0007/full/html>
- Morshed, A., & Khrais, L. T. (2025). Cybersecurity in Digital Accounting Systems: Challenges and Solutions in the Arab Gulf Region. *Journal of Risk and Financial Management*, 18(1), 41.
- Morshed, A., Ramadan, A., Maali, B., Khrais, L. T., & Baker, A. A. R. (2024). Transforming accounting practices: The impact and challenges of business intelligence integration in invoice processing. *Journal of Infrastructure, Policy and Development*, 8(6), 4241.
- Mpuon, J. A., Edama, A. J. M., Effiong, C., Obo, E. B., Ndem, S. E., Anna, E. H., Lebo, M. P., & Akam, H. S. (2024). Impact of agile business transformation dynamics on the supply chain performance of manufacturing firms. *International Journal of Agile Systems and Management*, 17(2), 153–192. <https://doi.org/10.1504/IJASM.2024.138821>
- Proykratok, W., Chuchottaworn, C., & Ngamcharoen, W. (2024). The evaluation and development of Thai logistics service providers to logistics management excellence. *Journal of Logistics, Informatics and Service Science*, 11(1), 209–227.
- Pu, G., & Qiao, W. (2025). Relational risk, knowledge sharing and supply chain resilience: The complementary role of blockchain governance and relational governance. *Journal of Knowledge Management*, 29(2), 301–341.
- Qureshi, M. R. N. M. (2022). Evaluating and Prioritizing the Enablers of Supply Chain Performance Management System (SCPMS) for Sustainability. *Sustainability*, 14(18), 11296.
- Quttainah, M. A., Kumar, A., & Kanwal, P. (2025). Knowledge management (KM) and supply chain agility: Investigating how KM practices contribute to supply chain agility in entrepreneurial contexts. In *Impacts of Entrepreneurial Orientation on Supply Chain Management* (pp. 291–320). IGI Global. <https://www.igi-global.com/chapter/knowledge-management-km-and-supply-chain-agility/357465>

- Ramadan, A., & Morshed, A. (2024). Optimizing retail prosperity: Strategic working capital management and its impact on the global economy. *Journal of Infrastructure, Policy and Development*, 8(5), 3827.
- Rialti, R., Marzi, G., Caputo, A., & Mayah, K. A. (2020). Achieving strategic flexibility in the era of big data: The importance of knowledge management and ambidexterity. *Management Decision*, 58(8), 1585–1600.
- Salhab, H., Zoubi, M., Khrais, L. T., Estaitia, H., Harb, L., Al Huniti, A., & Morshed, A. (2025). AI-Driven Sustainable Marketing in Gulf Cooperation Council Retail: Advancing SDGs Through Smart Channels. *Administrative Sciences*, 15(1), 20.
- Sardjono, W., Legowo, N., & Fairuszabadi, A. (2024). Leveraging IT service management to enhance helpdesk service quality in handling consumer complaints. *Journal of Logistics, Informatics and Service Science*, 11(4), 299–312.
- Sartori, J. T. D., Frederico, G. F., & De Fátima Nunes Silva, H. (2022). Organizational knowledge management in the context of supply chain 4.0: A systematic literature review and conceptual model proposal. *Knowledge and Process Management*, 29(2), 147–161. <https://doi.org/10.1002/kpm.1682>
- Syed, M., Aina, Y. A., & Yigitcanlar, T. (2024). Smart and Sustainable Doha? From Urban Brand Identity to Factual Veracity. *Urban Science*, 8(4), 241.
- Thomas, A. (2024). Digitally transforming the organization through knowledge management: A socio-technical system (STS) perspective. *European Journal of Innovation Management*, 27(9), 437–460.
- Viberg, O., Grönlund, Å., & Andersson, A. (2023). Integrating digital technology in mathematics education: A Swedish case study. *Interactive Learning Environments*, 31(1), 232–243. <https://doi.org/10.1080/10494820.2020.1770801>
- Wijayanti, R. W., Rokhim, R., Anas, E. P., & Aruan, D. T. (2024). Dynamic Managerial Capabilities in Marketing: A Systematic Review and Research Agenda. *Journal of Logistics, Informatics and Service Science*, 11(11), 366–387.
- Zhao, G., Hormazabal, J. H., Elgueta, S., Manzur, J. P., Liu, S., Chen, H., Lopez, C., Kasturiratne, D., & Chen, X. (2021). The impact of knowledge governance mechanisms on supply chain performance: Empirical evidence from the agri-food industry. *Production Planning & Control*, 32(15), 1313–1336. <https://doi.org/10.1080/09537287.2020.1809023>
- Zhao, W., Zhou, Y., Zhou, H., Wang, X., Sun, S., He, X., Luo, Y., Ying, B., Yao, Y., Ma, X., & Sun, X. (2025). Optimizing Reversible Phase-Transformation of FeS₂ Anode via Atomic-Interface Engineering Toward Fast-Charging Sodium Storage: Theoretical Predication and Experimental Validation. *Advanced Science*, 12(2), 2411884. <https://doi.org/10.1002/advs.202411884>