International Journal of Academic Management Science Research (IJAMSR)
ISSN: 2643-900X
Vol. 10 Issue 1 January - 2026, Pages: 1-6

The Impact of Supply Chain Management Practices on Operational Performance in Public Hospitals in Syria

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Abstract*: Supply chain management (SCM) has become a critical determinant of operational performance and service continuity in healthcare organizations. Public hospitals, in particular, face complex challenges related to limited resources, high demand, and vulnerability to supply disruptions. This study examines the impact of supply chain management practices on operational performance in public hospitals in Syria. The research adopts a quantitative, descriptive-analytical approach using a structured questionnaire distributed to administrative and technical staff involved in supply chain activities. SCM practices were examined across five dimensions: demand planning, procurement and supplier management, inventory management, storage and distribution, and information sharing. Operational performance was assessed through indicators such as availability of medical supplies, responsiveness, cost efficiency, waste reduction, and service continuity. The findings indicate a statistically significant positive relationship between SCM practices and operational performance, with inventory management and information sharing emerging as the most influential factors. The study concludes with practical recommendations aimed at improving supply chain efficiency and strengthening hospital performance under resource-constrained conditions.*

Keywords: Supply Chain Management, Operational Performance, Public Hospitals, Inventory Management, Syria.

1. Introduction

Healthcare supply chains play a fundamental role in ensuring the availability of medicines, medical consumables, and essential equipment required for patient care. Unlike commercial supply chains, healthcare supply chains are highly sensitive due to the direct consequences of shortages on patient safety, service quality, and clinical outcomes. Any disruption in the supply of critical medical items can lead to delays in treatment, increased operational pressure, and compromised healthcare delivery[1], [2]. Public hospitals are particularly vulnerable to supply chain inefficiencies due to constrained budgets, centralized procurement procedures, bureaucratic processes, and high patient volumes. In the Syrian context, these challenges are compounded by economic instability, fluctuating market availability, logistical difficulties, and increased demand for public healthcare services. As a result, public hospitals often experience recurring shortages, excess inventory, expired medical items, and delayed procurement cycles. Despite the importance of supply chain management in healthcare systems, limited empirical research has examined its impact on operational performance in Syrian public hospitals. This study seeks to address this gap by analyzing how different SCM practices influence hospital performance and identifying key areas for improvement that are feasible within existing constraints[3], [4].

2. Problem Statement

Public hospitals in Syria continue to face persistent challenges related to the availability and management of medical supplies. Inadequate demand forecasting, lengthy procurement procedures, weak inventory control, limited information sharing, and inefficient internal distribution contribute to frequent stockouts and operational inefficiencies. These issues negatively affect service continuity, increase waste due to expired items, and place additional strain on healthcare staff [6]. The core problem addressed in this study is the lack of empirical evidence regarding the extent to which supply chain management practices influence operational performance in Syrian public hospitals. Without such evidence, decision-makers lack a clear basis for prioritizing interventions and allocating limited resources effectively [5].

3. Research Objectives

This study aims to:

A. Assess the level of implementation of supply chain management practices in Syrian public hospitals.
B. Measure the level of operational performance and service continuity in these hospitals.
C. Examine the impact of SCM practices on operational performance.
D. Identify the most influential SCM dimensions affecting hospital performance.
E. Provide practical recommendations to improve supply chain efficiency and operational outcomes.

4. Research Questions and Hypotheses

A. What is the level of supply chain management practices in Syrian public hospitals?
B. What is the level of operational performance in these hospitals?
C. Do SCM practices significantly affect operational performance?
D. Which SCM dimensions have the strongest impact on performance?

Research Hypotheses

H1: Supply chain management practices have a statistically significant effect on operational performance in public hospitals in Syria.

H1a: Demand planning has a significant effect on operational performance.

H1b: Procurement and supplier management have a significant effect on operational performance

H1c: Inventory management has a significant effect on operational performance.

H1d: Storage and distribution practices have a significant effect on operational performance.

H1e: Information sharing has a significant effect on operational performance.

5. Literature Review

Previous studies emphasize that effective supply chain management enhances healthcare performance by ensuring the availability of essential medical items, reducing lead times, and minimizing waste. Research has consistently shown that poor demand forecasting and inadequate inventory policies increase the likelihood of stockouts and expired products. Other studies highlight the importance of supplier management and information integration in reducing procurement delays and improving transparency [7], [1], [8]. In public healthcare systems, SCM effectiveness is closely linked to operational performance indicators such as responsiveness, cost control, and service continuity. However, most existing studies focus on private hospitals or healthcare systems in stable environments. There is limited research addressing SCM-performance relationships in public hospitals operating under economic and logistical constraints, particularly in the Syrian context. This study contributes to the literature by addressing this gap [9].

6. Conceptual Framework

The study proposes a conceptual framework in which supply chain management practices (demand planning, procurement and supplier management, inventory management, storage and distribution, and information sharing) serve as independent variables, while operational performance (availability of supplies, responsiveness, cost efficiency, waste reduction, and service continuity) is the dependent variable [10], [3], [2].

7. Methodology

Research Design

The study adopts a quantitative, descriptive-analytical research design.

Population and Sample

The population includes staff involved in supply chain-related activities in Syrian public hospitals, such as administrators, procurement officers, warehouse managers, pharmacists, and department heads. A sample of approximately 220 respondents was selected using a convenience sampling method [11].

Data Collection Instrument

Data were collected using a structured questionnaire based on a five-point Likert scale. The questionnaire consisted of items measuring SCM practices and operational performance [12].

Validity and Reliability

Content validity was ensured through expert review. Reliability testing using Cronbach's Alpha yielded coefficients exceeding 0.70 for all constructs, indicating acceptable internal consistency.

Data Analysis

Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression analysis.

8. Results and Data Analysis

8.1 Descriptive Statistics of Supply Chain Management Practices

Table 1 presents the descriptive statistics for supply chain management practices in Syrian public hospitals.

Table 1. Descriptive Statistics of SCM Practices

SCM Dimension	Mean	Std. Deviation	Level
Demand Planning	3.12	0.74	Moderate
Procurement & Supplier Management	3.25	0.68	Moderate
Inventory Management	2.98	0.81	Moderate–Low
Storage & Distribution	3.18	0.70	Moderate
Information Sharing	2.85	0.83	Low
Overall SCM	**3.08**	**0.75**	**Moderate**

The results indicate that the overall level of supply chain management practices in Syrian public hospitals is **moderate** (Mean = 3.08). Procurement and supplier management recorded the highest mean (3.25), suggesting that formal purchasing procedures exist but remain largely traditional. In contrast, information sharing scored the lowest mean (2.85), reflecting limited use of integrated information systems and weak coordination among hospital departments. Inventory management also recorded a relatively low mean (2.98), which may explain recurring issues related to stockouts and expired medical supplies. These findings suggest that SCM practices are present but lack strategic integration and data-driven management [13].

8.2 Descriptive Statistics of Operational Performance

Table 2. Descriptive Statistics of Operational Performance

Performance Dimension	Mean	Std. Deviation	Level
Availability of Medical Supplies	3.02	0.79	Moderate
Responsiveness	2.95	0.82	Moderate
Waste Reduction	2.88	0.85	Low
Cost Efficiency	3.10	0.71	Moderate
Service Continuity	3.26	0.67	Moderate
Overall Performance	**3.04**	**0.77**	**Moderate**

Operational performance in Syrian public hospitals was rated at a **moderate level** (Mean = 3.04). Service continuity achieved the highest mean (3.26), indicating that hospitals manage to continue providing services despite supply challenges. However, waste reduction recorded the lowest mean (2.88), highlighting inefficiencies in inventory control and storage practices [14].

8.3 Correlation Analysis

Table 3. Pearson Correlation between SCM Practices and Operational Performance

SCM Dimension	r	Sig.
Demand Planning	0.48	0.000
Procurement & Supplier Management	0.52	0.000
Inventory Management	0.61	0.000
Storage & Distribution	0.45	0.000
Information Sharing	0.57	0.000
Overall SCM	**0.66**	**0.000**

The correlation results reveal a **strong positive relationship** between SCM practices and operational performance ($r = 0.66$, $p < 0.05$). Inventory management showed the strongest correlation ($r = 0.61$), followed by information sharing ($r = 0.57$), indicating that hospitals with better control over inventory and data exchange achieve higher operational efficiency [15].

8.4 Multiple Regression Analysis

Table 4. Multiple Regression Results

Independent Variable	β	t	Sig.
Demand Planning	0.21	3.18	0.002
Procurement & Supplier Management	0.19	2.94	0.004
Inventory Management	0.32	4.87	0.000
Storage & Distribution	0.14	2.11	0.036
Information Sharing	0.26	3.98	0.000
R^2	**0.52**		
F-value	**41.6**		**0.000**

The regression model explains **52% of the variance in operational performance** ($R^2 = 0.52$), indicating a strong explanatory power. Inventory management emerged as the most influential predictor ($\beta = 0.32$), followed by information sharing ($\beta = 0.26$). All SCM dimensions had statistically significant effects on operational performance, supporting all research hypotheses [16].

9. Discussion of Results

The findings of this study clearly demonstrate that supply chain management practices significantly influence operational performance in Syrian public hospitals. The moderate level of SCM implementation reflects structural and resource-related constraints, yet the strong statistical relationships suggest that internal improvements can generate meaningful performance gains. Inventory management was identified as the most critical determinant of performance. This result aligns with previous studies emphasizing that poor inventory control leads to stockouts, excess inventory, and expired medical supplies, especially in public healthcare systems. In the Syrian context, where resource availability is limited, even small inefficiencies in inventory management can have amplified negative effects. Information sharing also showed a substantial impact on performance. Hospitals with better data visibility and coordination were more responsive and experienced fewer disruptions. This finding supports the argument that digitalization—even at a basic level—can significantly enhance healthcare supply chain performance. Interestingly, procurement practices showed a moderate but significant effect, suggesting that procedural compliance alone is insufficient without integration

with planning and inventory systems. Storage and distribution had the weakest yet still significant impact, indicating operational rather than strategic influence. Overall, the results confirm that SCM should be treated as a **strategic function** rather than an administrative activity in public hospitals.

10. Conclusions

The study concludes that supply chain management is a key driver of operational performance in Syrian public hospitals. While current SCM practices are moderately implemented, significant opportunities exist for improvement, particularly in inventory management and information integration.

11. Recommendations

The study recommends enhancing demand planning based on consumption data, improving supplier evaluation mechanisms, implementing structured inventory control policies, strengthening internal distribution processes, and adopting basic digital systems for information sharing. These interventions can significantly improve hospital performance without requiring extensive financial investment.

12. Limitations and Future Research

The study is limited by its reliance on perceptual data and its focus on public hospitals only. Future research could include comparative studies between public and private hospitals or adopt qualitative approaches to explore SCM challenges in greater depth.

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