

The Role of Knowledge Management in Enhancing the Efficiency of Supply Chain Operations in Service Organizations - A Theoretical Review and Analysis of Previous Studies with Application to Jeddah Islamic Port

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ABSTRACT

The modern business environment is undergoing rapid transformations, compelling service organizations to adopt effective knowledge management strategies to enhance operational efficiency and achieve sustainable competitive advantage. This study aims to explore and analyze the theoretical framework of knowledge management, its significance, objectives, and components, with a particular focus on its role in improving the performance of supply chain operations within service organizations. The study also reviews relevant Arabic and international previous research, highlighting both challenges and opportunities associated with the implementation of knowledge management practices in this context. The literature review indicates that knowledge management contributes to improving the efficiency of supply chain processes by enhancing knowledge collection, storage, distribution, and effective application, resulting in faster decision-making and reduced operational costs. The paper recommends supporting work environments with an integrated knowledge infrastructure to maximize the benefits of knowledge assets and enhance the competitiveness of service organizations, particularly in critical sectors such as seaports, with a special emphasis on Jeddah Islamic Port.

Key words: Knowledge Management, Operational Efficiency, Supply Chains, Service Organizations, Ports, Logistics Services, Jeddah Islamic Port.

1. INTRODUCTION

In light of the rapid developments and profound transformations experienced by the global business

environment, knowledge has become one of the most important strategic assets of modern organizations. Institutional success increasingly depends on the ability to effectively manage and leverage knowledge resources. As globalization accelerates and competition intensifies, interest in the role of knowledge management has grown as a means of achieving operational efficiency and performance sustainability, particularly within service organizations that primarily rely on intellectual capital and organizational capabilities rather than traditional tangible assets..

Today, knowledge management serves as a primary driver of organizational innovation and competitive advantage, contributing to the effective collection, organization, distribution, and application of both tacit and explicit knowledge, which in turn improves the quality of operations and services provided [17]. Technological, social, and economic changes have exponentially increased the volume of available information, making the greatest challenge for organizations not the lack of information but rather the ability to process it intelligently and convert it into actionable knowledge to support decision-making and achieve strategic goals [1].

Knowledge management is particularly critical for the success of service organizations, which depend on the quality of their services to achieve customer satisfaction and loyalty. Effective institutional knowledge management is essential across all stages of the supply chain, from suppliers to end customers [9]. In this regard, knowledge management plays a pivotal role in supporting

supply chain operations by facilitating information flow, improving coordination among various stakeholders, and increasing flexibility in responding to sudden market changes [25].

Numerous studies confirm that knowledge management enhances supply chain performance by strengthening the organization's capacity for demand forecasting, resource planning, waste reduction, and speeding up production and distribution cycles [18]. However, achieving these benefits requires the presence of an organizational culture that supports knowledge sharing, an advanced technological infrastructure, and effective mechanisms to encourage individuals to exchange knowledge [27].

In the Arab context, studies have revealed that many ports in Arab countries, despite possessing significant financial and human resources, suffer from weak knowledge management practices within supply chain operations. This negatively impacts their regional and global competitiveness [22] ; [4]). Ports are critical sectors that demand the highest levels of logistical efficiency to ensure the smooth flow of goods and services. Jeddah Islamic Port represents a prominent example in Saudi Arabia, serving as a strategic port striving to achieve operational excellence and support Saudi Arabia's Vision 2030, which aims to transition toward a knowledge-based economy [23].

Despite ongoing efforts to improve operational performance in Arab ports, many challenges persist, including weak internal coordination, inadequate technological infrastructure, and limited adoption of integrated knowledge management strategies [5];[13];[14]. This highlights the urgent need to examine the relationship between knowledge management and the efficiency of supply chain operations in service organizations and to propose practical models based on global and local best practices.

Accordingly, this study seeks to analyze the theoretical framework of knowledge management and its relationship to improving supply chain performance by reviewing relevant literature, identifying key practices and challenges, and offering a scholarly perspective that can support efforts to develop ports and service organizations both within Saudi Arabia and beyond.

2. THEORETICAL FRAMEWORK

Knowledge management has emerged as a critical concept in response to the accelerating pace of information generation and dissemination in the modern global business environment. It is widely regarded as a systematic process through which organizations collect, organize, store, distribute, and effectively apply knowledge to enhance decision-making and achieve strategic objectives. Scholars such as [16] and [2] have described knowledge management as a dynamic set of activities designed to transform knowledge resources into operational power that supports organizational success and long-term competitiveness. This process involves handling both explicit knowledge, which is documented and easily shared, and tacit knowledge, which resides in the minds of individuals and is often more difficult to codify and disseminate, as highlighted by [6].

The significance of knowledge management has become increasingly apparent as organizations face the dual challenges of rapid technological advancements and intense market competition. Knowledge management enables organizations to foster innovation, improve operational efficiency, and enhance decision-making processes. According to [21] and [7], knowledge management not only increases productivity and service quality but also cultivates a collaborative organizational culture that promotes the sharing and utilization of knowledge across all functional areas. By systematically managing their knowledge assets, organizations can maximize the value derived from both tangible and intangible resources, thereby creating sustainable competitive advantages.

The objectives of knowledge management are multifaceted and strategically aligned with the broader goals of organizational development. Researchers such as [3] and [19] have emphasized that knowledge management aims to identify, acquire, and safeguard critical knowledge, encourage the reuse and application of knowledge, support innovation and institutional awareness, and develop the intellectual capital of the workforce. Furthermore, effective knowledge management ensures the optimization of organizational technologies and facilitates continuous learning and improvement, which are essential for maintaining competitiveness in rapidly evolving environments.

Several distinctive characteristics set knowledge management apart from traditional administrative functions. [15] and [20] note that knowledge management

focuses on integrating both explicit and tacit knowledge, promoting operational flexibility, enhancing learning processes within organizations, fostering creative thinking, and reducing operational costs. Additionally, knowledge management supports the rapid adaptation to environmental and market changes, encourages the use of advanced technological tools for knowledge transfer and storage, and nurtures a culture of collaboration and shared learning. These characteristics underscore the transformative potential of knowledge management as a core component of organizational strategy and performance.

The processes of knowledge management encompass a series of interconnected activities that facilitate the effective utilization of knowledge within organizations. Scholars such as [12] and [17] have identified key processes including knowledge creation, which involves generating new insights and solutions through research, development, and experiential learning. Knowledge organization entails categorizing and analyzing knowledge to ensure its relevance and accessibility. Knowledge storage relies on the use of databases and electronic repositories to preserve valuable knowledge assets. Knowledge dissemination involves sharing knowledge through meetings, networks, and information systems, while knowledge application refers to the practical use of knowledge in decision-making and problem-solving activities. The successful execution of these processes is critical for leveraging knowledge to drive organizational performance and innovation.

The relationship between knowledge management and supply chain efficiency is particularly significant in service organizations, where the effective flow of information and coordination among various stakeholders are essential for operational success. [25] highlighted that knowledge sharing among supply chain participants enhances coordination, increases operational flexibility, and contributes to waste reduction and improved responsiveness to market changes. [18] demonstrated that the adoption of knowledge management practices within supply chains enhances demand forecasting, resource planning, and the development of strong relationships with suppliers and customers. [27] further noted that knowledge management accelerates logistics innovation and facilitates the delivery of value-added services, thereby enhancing competitiveness in global markets.

In the context of Arab countries, studies have revealed significant challenges related to the implementation of knowledge management practices within supply chains.

[22], the Arab Monetary Fund (2017), and [5] reported that many Arab ports and logistics organizations suffer from inadequate technological infrastructure, limited knowledge-sharing cultures, and a shortage of skilled personnel trained in knowledge management practices. These deficiencies have hindered operational efficiency and reduced the competitiveness of Arab ports on the regional and global stages. Despite these challenges, recent initiatives, such as those undertaken by the Saudi Ports Authority (2023) at Jeddah Islamic Port, have demonstrated the potential benefits of integrating knowledge management strategies to improve operational performance and support national development goals, including Saudi Arabia's Vision 2030.

Overall, the theoretical framework underscores the pivotal role of knowledge management in enhancing supply chain efficiency and organizational performance. By fostering innovation, improving decision-making, and facilitating effective knowledge sharing and utilization, knowledge management serves as a strategic enabler for service organizations seeking to navigate complex and dynamic business environments successfully.

3. LITERATURE REVIEW

The relationship between knowledge management and supply chain efficiency has been the focus of numerous studies across various contexts. [25] highlighted that successful knowledge management relies heavily on organizational structures that support knowledge sharing across multiple levels, contributing to enhanced operational performance and reduced processing times within supply chains. [18] confirmed the central role of knowledge management in facilitating the rapid flow of materials and information throughout supply chains, thereby improving organizational competitiveness, especially in environments characterized by rapid change. They recommended adopting comprehensive knowledge management methodologies covering the acquisition, storage, transfer, and utilization of knowledge.

[22] reported that supply chain management practices in Arab ports have lagged behind global advancements, emphasizing that most Arab ports continue to apply traditional supply management methods, which has led to a decline in their competitiveness at both regional and global levels. The Arab Monetary Fund (2017) identified administrative and legislative challenges that negatively impact the performance of Arab ports, including the lack of unified agreements facilitating supply chain operations, complex procedures, and high operating costs. The report recommended regulatory modernization and the

promotion of a knowledge management culture to improve operational efficiency.

[10] underscored the importance of integrating knowledge management with technological advancements to enhance logistics efficiency, demonstrating that the use of advanced digital knowledge management tools accelerates operational decision-making and reduces human error. [27] demonstrated that the application of knowledge management practices within supply chains improves organizations' adaptability to market changes and enhances service quality. They stressed the importance of investing in integrated knowledge management systems that support all stages of the supply chain. [27] also noted that knowledge management facilitates the reuse of best practices and minimizes costs associated with rework, resulting in improved overall supply chain operational efficiency.

Xue (2017) highlighted the contribution of knowledge management to supply chain management through supporting predictive data analysis, enabling organizations to forecast demand and plan logistics resources effectively. [14] found that knowledge management is a critical factor in enhancing the quality of logistics services in Arab ports by improving information flow among different supply chain stakeholders, reducing costs, and increasing customer satisfaction.

[5]) examined technological infrastructure challenges in Arab ports, noting that the absence of advanced

information systems was a major obstacle to achieving operational excellence. The study emphasized the importance of investing in knowledge management to enhance internal and external communication systems within ports. [8] called for more applied research focusing on integrating knowledge management strategies into supply chain operations in service organizations, citing a scarcity of in-depth empirical studies directly linking the two fields in the Arabic research context.

[23] provided an institutional analysis of Jeddah Islamic Port, highlighting the significance of developing an integrated knowledge-sharing infrastructure and promoting knowledge sharing across departments to support the port's strategic goals and align with [23]. [7] identified knowledge management as a vital tool for enhancing supply chain performance, particularly in dynamic work environments. They emphasized its role in fostering internal innovation, facilitating adaptation to changing customer needs, and strengthening organizational competitiveness.

[24] examined knowledge management from the perspective of service organizations, concluding that organizations implementing effective knowledge management practices achieve higher levels of customer satisfaction and improved operational quality compared to those that do not. Table 1 below shows the comparison of previous studies.

Table 1: Comparison of Previous Studies

Author(s) & Year	Methodology	Key Findings	Main Recommendations
Naharawi (2014) [22]	Descriptive analysis	Limited development of supply chain practices in Arab ports.	Adopt modern knowledge management methods.
Arab Monetary Fund (2017) [4]	Economic report analysis	Administrative and legislative barriers affecting port performance.	Update regulations and foster knowledge-sharing culture.
Bali (2021) [5]	Case study analysis	Inadequate technological infrastructure.	Invest in technology and develop knowledge management systems.
Hassan (2020) [14]	Quantitative field study	Knowledge management improves logistics service quality.	Promote knowledge-sharing culture in ports.
Ben Halim et al. (2021) [8]	Literature review	Scarcity of applied studies linking KM and supply chains.	Conduct more field-based empirical studies.
Saudi Ports Authority (2023) [23]	Institutional analysis	Importance of developing knowledge-sharing infrastructure.	Implement integrated knowledge-sharing strategies.
Walczak (2005) [25]	Theoretical analytical study	Importance of organizational structures supporting knowledge sharing.	Design flexible structures encouraging knowledge exchange.
McEvoy et al. (2015) [18]	Systematic review	KM accelerates material and information flow and improves performance.	Adopt comprehensive knowledge management methodologies.
Zouari & Dakhli (2018) [27]	Quantitative field study	KM enhances adaptability and service quality.	Invest in integrated KM systems.
Dastyar et al. (2017) [10]	Applied survey study	KM and technology integration improves logistics efficiency.	Integrate digital KM tools into operations.
Xue (2017) [26]	Analytical study	KM supports predictive data analysis for effective planning.	Use business intelligence systems to support KM.
Tish & Kurtulmuş (2022) [24]	Comparative study	KM improves customer satisfaction and operational quality.	Promote KM practices across all organizational departments.
Belkaid & Allam (2023) [7]	Quantitative analytical study	KM fosters innovation and strengthens competitiveness.	Enhance innovation culture through effective KM.

4. DISCUSSION

The literature reviewed in this study underscores a strong integrative relationship between knowledge management and supply chain performance, wherein knowledge management emerges as a critical element in enhancing operational efficiency and achieving competitive advantage for service organizations. Previous studies have consistently demonstrated that implementing knowledge management practices improves information flow, accelerates responsiveness to market changes, and reduces operational costs—core requirements for attaining supply chain efficiency. However, a thorough review of the literature reveals that most international studies have primarily focused on industrial environments or supply chains within manufacturing and technology sectors, paying limited attention to service organizations, particularly in Arab contexts where unique organizational and technological challenges prevail. The analysis of Arabic studies reveals a scarcity of applied research directly linking knowledge management to supply chain efficiency in service organizations, highlighting a gap between theoretical knowledge and practical application.

International studies, such as those by [25] and [18] emphasize the importance of developing organizational structures and cultures that support knowledge sharing. They confirm that organizations investing in knowledge management experience significant improvements in performance indicators, including reduced process execution times, increased responsiveness to changes, and enhanced service quality. Other studies, including those by [27], highlight the role of knowledge management in fostering institutional innovation and promoting the reuse of best practices, which minimizes rework-related costs and boosts competitiveness. These findings highlight the necessity of incorporating knowledge management into the strategic plans of service organizations, especially those operating in dynamic and complex environments like ports.

Conversely, Arabic studies, such as those by [22] and the [4], indicate challenges related to technological infrastructure, a lack of knowledge-sharing culture, and insufficiently trained human resources capable of

implementing knowledge management practices. These challenges negatively impact the ability of Arab ports to compete globally and hinder efforts to achieve operational excellence. Nevertheless, recent studies, such as that by the Saudi Ports Authority, show gradual improvement in the adoption of knowledge management strategies, particularly in Saudi ports aligning with the objectives of Vision 2030.

This discussion highlights the need to view knowledge management not as a supplementary administrative function but as a comprehensive strategy embedded within all organizational processes, including every stage of the supply chain from suppliers to end customers. Achieving this requires developing clear knowledge management policies, providing technological infrastructure to support knowledge collection, storage, and transfer, and fostering an organizational culture that encourages employees to actively participate in knowledge management activities. Additionally, organizations must focus on developing employees' knowledge-related skills through continuous training and appropriate incentives to promote innovation and knowledge sharing.

Furthermore, the analysis indicates that the local context plays a significant role in determining the effectiveness of knowledge management implementation. Organizations operating in stable regulatory environments with clear governmental support tend to achieve greater success in executing knowledge management strategies compared to those lacking institutional and legislative backing. This is reflected in the notable improvement in the performance of certain Saudi ports following the adoption of digital and knowledge-based initiatives within their strategic plans. Therefore, the development of knowledge management should occur within a comprehensive framework that considers environmental, organizational, and cultural factors.

Based on these findings, applying knowledge management in the context of supply chains presents a strategic opportunity to enhance operational efficiency and elevate service quality within service organizations. However, realizing this potential requires organized efforts to overcome current challenges through the adoption of comprehensive strategies that integrate technology, organizational

infrastructure, human resource development, and the creation of a knowledge-supportive organizational culture. Future researchers should conduct more specialized field studies to assess the impact of knowledge management on performance indicators across different supply chain stages, thereby deepening the practical understanding of this field and contributing to the development of effective business models suited to the specific characteristics of the Arab environment.

5. CONCLUSION

In light of the analysis and findings presented in this study, it is evident that knowledge management constitutes a foundational pillar for enhancing the efficiency of supply chain operations within service organizations, particularly in dynamic and complex environments such as ports. The theoretical framework and previous studies reviewed demonstrate that organizations adopting knowledge management practices achieve higher levels of operational efficiency through improved information flow, enhanced coordination among supply chain stakeholders, and greater adaptability to rapid market changes. These benefits translate into faster decision-making, cost reductions, and improved service quality.

However, the literature also reveals a significant research gap, particularly within the Arabic context, where few applied studies directly examine the relationship between knowledge management and supply chain performance. This gap underscores the need for more empirical research and practical models tailored to the unique organizational, technological, and cultural challenges faced by service organizations in the Arab region.

The study emphasizes that successful implementation of knowledge management requires more than just adopting new technologies or processes; it demands the development of a comprehensive strategy encompassing technological infrastructure, supportive organizational culture, clear policies, and continuous human resource development. These elements collectively foster a knowledge-driven environment that promotes innovation, knowledge sharing, and sustainable competitive advantage.

Jeddah Islamic Port serves as a promising example of how service organizations can leverage knowledge

management to improve operational performance and support national strategic objectives, such as Saudi Arabia's Vision 2030. The port's efforts to develop an integrated information infrastructure and promote knowledge sharing across departments highlight the practical benefits of embedding knowledge management within supply chain operations.

In conclusion, this study recommends that service organizations, especially those in critical sectors like logistics and port operations, prioritize the integration of knowledge management into their strategic and operational frameworks. Furthermore, future research should focus on developing and testing applied models that illustrate how knowledge management can be effectively harnessed to optimize supply chain efficiency and drive sustainable organizational success in diverse service contexts.

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