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## Understanding Organizational Readiness for Green Supply Chain Management in Public Sector Supply Chains

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### **Abstract**

*The growing emphasis on environmental sustainability has encouraged organizations to integrate environmental considerations into their supply chain operations through the adoption of Green Supply Chain Management (GSCM). However, the successful implementation of GSCM largely depends on the internal readiness of organizations to support such initiatives. This study aims to analyze the organizational readiness for implementing GSCM at PT PLN (Persero) Headquarters, Indonesia's state-owned electricity company. The research employs a qualitative descriptive approach to explore organizational conditions related to material planning and supply chain information system integration. Data were collected through participant observation during an internship period, unstructured interviews with personnel involved in supply chain management, and analysis of internal organizational documents. The findings indicate that the overall readiness for GSCM implementation within the organization can be categorized as moderate. Key challenges include inconsistencies in information sharing across organizational units and limited integration between digital systems, which affect the efficiency and accuracy of material planning processes. In addition, supplier relationships remain largely focused on short-term operational needs rather than long-term sustainability collaboration. Nevertheless, strong managerial commitment and existing technological infrastructure provide important opportunities for strengthening GSCM implementation in the future. This study contributes to the literature by providing empirical insights into organizational readiness for GSCM within the context of a public sector utility, highlighting the importance of aligning organizational processes, digital systems, and supply chain relationships to support sustainable supply chain practices.*

*Keywords: Green Supply Chain Management, Organizational Readiness, Public Sector Supply Chain, Sustainability, State-Owned Enterprise.*

### **1. Introduction**

The increasing global emphasis on environmental sustainability has encouraged organizations to integrate environmental considerations into their operational and strategic activities. In particular, supply chain management has become a critical area for implementing sustainability initiatives because it encompasses multiple stages of production, procurement, distribution, and coordination among stakeholders. Within this context, Green Supply Chain Management (GSCM) has emerged as a strategic approach that integrates environmental thinking into supply chain management processes, including product design, material sourcing, manufacturing, distribution, and end-of-life management [1], [2]. The adoption of GSCM has been widely recognized as an effective mechanism for reducing environmental impact while simultaneously improving operational efficiency and long-term organizational competitiveness [3].

Recent studies indicate that the implementation of GSCM is increasingly driven by regulatory pressures, stakeholder expectations, and global sustainability agendas such as decarbonization and climate mitigation initiatives [4], [5], [6]. Organizations across industries are therefore encouraged to adopt environmentally responsible practices in their supply chain activities to support broader sustainability goals. However, the effectiveness of GSCM implementation varies across organizational contexts, particularly between private sector manufacturing firms and public sector organizations. Public sector entities often operate under more complex regulatory frameworks, bureaucratic structures, and service-oriented mandates, which may influence how sustainability initiatives are adopted and implemented within their supply chain operations [7].

In developing economies such as Indonesia, state-owned enterprises (SOEs) play a crucial role in driving national economic development and public service provision. Among these organizations, PT PLN (Persero) serves as the primary electricity provider responsible for managing a nationwide energy infrastructure and supply chain network [8]. The complexity of PLN's operations involves extensive coordination across regional units, procurement systems, and logistics processes for critical materials used in electricity generation and distribution. As Indonesia commits to achieving Net Zero Emission (NZE) targets by 2060, PLN faces increasing pressure to integrate sustainability principles into its operational and supply chain management practices. Consequently, the adoption of GSCM has become an important strategic agenda within the organization.

Despite the growing importance of GSCM in large infrastructure organizations, its successful implementation largely depends on the organizational readiness to support such initiatives. Organizational readiness refers to the extent to which an organization possesses the necessary capabilities, systems, resources, and managerial commitment to implement new strategic practices effectively [9]. Previous studies suggest that insufficient readiness often leads to partial or symbolic adoption of sustainability practices without meaningful integration into core operational processes [10]. In large and decentralized organizations, readiness becomes even more critical because sustainability initiatives require coordination across multiple organizational units and integration of information systems supporting supply chain planning and decision-making [11].

Existing literature on GSCM has primarily focused on manufacturing industries, where environmental management practices are closely linked to production activities and regulatory compliance [12], [13]. In contrast, empirical studies examining organizational readiness for GSCM within public sector utilities and state-owned enterprises remain relatively limited, particularly in the context of developing countries [13], [14]. Moreover, limited attention has been given to how internal supply chain processes—such as material planning, information sharing, and system integration—influence the readiness of organizations to implement GSCM effectively. This gap highlights the need for more context-specific investigations that explore how organizational structures, digital infrastructure, and stakeholder relationships shape GSCM readiness in public sector environments.

To address this gap, the present study aims to analyze the organizational readiness for implementing Green Supply Chain Management in PT PLN (Persero) Headquarters, with particular attention to the material planning process and the integration of supply chain information systems. Drawing on recent GSCM literature, this study examines readiness through five key dimensions: information sharing, process integration, long-term relationship with suppliers, technology readiness, and organizational commitment. By exploring these dimensions within the operational context of a large state-owned utility company, this research seeks to provide a comprehensive understanding of the factors that influence the preparedness of public sector organizations to adopt sustainable supply chain practices.

This study contributes to the literature in two main ways. First, it extends the discussion of GSCM by examining organizational readiness in the context of public sector utilities, a setting that has received relatively limited attention in prior research. Second, it provides empirical insights into how information systems, inter-unit coordination, and supply chain relationships influence the implementation of sustainability practices in large-scale infrastructure organizations. From a practical perspective, the findings are expected to provide recommendations for improving data standardization, system integration, and collaborative relationships within supply chain networks to support the effective implementation of GSCM in state-owned enterprises.

## **2. Literature Review and Research Framework**

### **2.1 Green Supply Chain Management**

Green Supply Chain Management (GSCM) has evolved into an important strategic approach for integrating environmental considerations into supply chain activities. Traditionally, supply chain management focused primarily on efficiency, cost reduction, and operational performance [15], [16], [17]. However, increasing environmental concerns and regulatory pressures have encouraged organizations to incorporate sustainability principles into supply chain decision-making processes. GSCM therefore represents the integration of environmental thinking into supply chain management, including product design, material sourcing, manufacturing processes, distribution systems, and end-of-life product management [1], [18].

Recent literature emphasizes that GSCM plays a significant role in improving both environmental and operational performance. By adopting environmentally responsible supply chain practices, organizations can reduce waste, improve resource efficiency, and strengthen their sustainability performance [3]. Furthermore, GSCM initiatives often create opportunities for innovation and collaboration among supply chain partners, enabling firms to develop environmentally friendly products and processes [7].

The importance of GSCM has become increasingly evident as global sustainability agendas intensify. Governments, regulators, and stakeholders now demand greater transparency and environmental responsibility from organizations across industries. As a result, firms are encouraged to integrate environmental considerations into their supply chain operations in order to meet sustainability targets and enhance organizational legitimacy [18].

Although a large body of research has examined GSCM implementation in manufacturing sectors, the application of GSCM within public sector organizations remains relatively underexplored. Public organizations often operate under complex regulatory frameworks, bureaucratic structures, and multiple stakeholder expectations, which may affect how sustainability initiatives are implemented within supply chain operations [7]. Consequently, understanding the organizational conditions that support GSCM implementation in public sector contexts becomes increasingly important.

## **2.2 Organizational Readiness for Green Supply Chain Management**

Organizational readiness is widely recognized as a critical determinant of successful innovation and sustainability implementation. In the context of GSCM, organizational readiness refers to the degree to which an organization possesses the capabilities, resources, and internal support necessary to implement environmentally sustainable supply chain practices effectively.

Previous studies indicate that organizations often face a gap between sustainability commitments at the policy level and actual implementation within operational processes [4]. This gap is frequently attributed to insufficient readiness in terms of technological infrastructure, internal coordination, and managerial commitment. Without adequate readiness, organizations may adopt sustainability initiatives symbolically rather than substantively integrating them into their core operational systems.

In large and decentralized organizations, readiness becomes even more critical because sustainability initiatives require coordination across multiple organizational units and integration of complex information systems supporting supply chain activities. [18] argue that organizations with higher readiness levels tend to demonstrate stronger sustainability performance because they are better able to align internal processes, technologies, and stakeholder relationships.

Therefore, assessing organizational readiness represents an important preliminary step before evaluating the effectiveness of GSCM implementation. By understanding the internal factors that influence readiness, organizations can identify potential barriers and develop strategies to facilitate the successful adoption of sustainable supply chain practices.

## **2.3 Dimensions of Green Supply Chain Management Readiness**

Recent literature identifies several organizational dimensions that influence readiness for implementing GSCM. These dimensions include information sharing, process integration, supplier relationships, technological capability, and organizational commitment. Together, these elements represent the internal mechanisms that enable organizations to coordinate sustainability practices across supply chain activities.

### **Information Sharing**

Information sharing is considered a fundamental prerequisite for effective supply chain management. Accurate and timely exchange of information allows organizations to coordinate planning activities, improve decision-making, and enhance supply chain transparency. In the context of GSCM, information sharing enables organizations to monitor environmental impacts, track material flows, and coordinate sustainability initiatives

across supply chain partners [18]. Inconsistent or fragmented information exchange can create coordination challenges and hinder the implementation of sustainable supply chain practices.

### **Process Integration**

Process integration refers to the degree to which organizational processes are coordinated and aligned across different functional units within the supply chain. Effective integration enables organizations to synchronize procurement, logistics, and production planning activities while minimizing inefficiencies and operational disruptions. Studies have shown that organizations with low levels of process integration often rely on manual processes and fragmented systems, which can impede the implementation of GSCM initiatives [19].

### **Long-Term Relationship with Suppliers**

Collaborative relationships with suppliers represent another important factor in GSCM readiness. Long-term partnerships allow organizations to align environmental objectives, share knowledge, and jointly develop sustainable supply chain solutions. Environmental collaboration between firms and suppliers has been shown to significantly improve sustainability performance by facilitating the adoption of green technologies and environmentally responsible practices [7].

### **Technology Readiness**

Technological capability plays a crucial role in supporting GSCM implementation. Digital supply chain systems enable organizations to collect, process, and analyze large volumes of operational data, which can support environmental monitoring and performance evaluation. According to [3], technological readiness functions as a key enabler that allows organizations to integrate environmental considerations into supply chain planning and decision-making processes.

### **Organizational Commitment**

Finally, organizational commitment from top management represents a critical driver of sustainability initiatives. Leadership commitment ensures that environmental goals are integrated into corporate strategy, resource allocation decisions, and organizational policies. Without strong managerial support, sustainability initiatives often struggle to gain momentum and may fail to achieve long-term impact [18].

## **2.4 Research Framework**

Based on the literature review, this study conceptualizes GSCM readiness as a multidimensional construct consisting of five key organizational dimensions: information sharing, process integration, long-term supplier relationships, technology readiness, and organizational commitment. These dimensions collectively influence the ability of organizations to implement sustainable supply chain practices effectively.

In the context of PT PLN (Persero), these readiness dimensions are particularly relevant because the organization operates a complex nationwide supply chain system involving multiple operational units and digital infrastructure. Evaluating these dimensions therefore provides a comprehensive perspective on the organizational preparedness required to support the implementation of Green Supply Chain Management.

## **3. Research Method**

This study employs a qualitative descriptive approach to analyze the organizational readiness for implementing Green Supply Chain Management (GSCM) at PT PLN (Persero) Headquarters. A qualitative approach was chosen because the research aims to explore organizational conditions, operational practices, and coordination processes that influence the implementation of sustainable supply chain initiatives. Such phenomena are complex and context-dependent, making qualitative methods suitable for capturing the dynamics of organizational readiness in real operational settings.

The research was conducted in the Supply Chain Management Division of PT PLN (Persero) Headquarters, which is responsible for coordinating material planning and supply chain operations across organizational units. As

Indonesia's national state-owned electricity company, PLN manages a large and complex supply chain network that supports electricity generation, transmission, and distribution nationwide. Within this operational context, material planning plays a critical role in ensuring the availability of equipment and infrastructure required for electricity services. The increasing emphasis on sustainability and Indonesia's commitment to achieving Net Zero Emissions by 2060 has encouraged PLN to integrate environmental considerations into its operational strategies, including supply chain management.

Data were collected using both primary and secondary sources. Primary data were obtained through participant observation during an internship period in the Supply Chain Management Division and through unstructured interviews with personnel involved in supply chain planning and management activities. These methods allowed the researcher to gain direct insights into operational practices, coordination mechanisms, and organizational challenges related to GSCM implementation. Secondary data were obtained from internal organizational documents, including material planning reports, procurement procedures, and internal policies related to supply chain management and sustainability initiatives.

The collected data were analyzed using qualitative analytical procedures consisting of data reduction, data display, and conclusion drawing. The findings were interpreted based on five dimensions of GSCM readiness identified in the literature: information sharing, process integration, long-term relationships with suppliers, technology readiness, and organizational commitment. To ensure the credibility of the findings, the study applied data triangulation by comparing information obtained from observations, interviews, and organizational documents. Although the research focuses on a single organization and therefore has limited generalizability, the findings provide valuable insights into the organizational readiness required to support the implementation of sustainable supply chain practices in large public sector utilities.

#### **4. Result and Discussion**

The findings of this study indicate that the readiness for implementing Green Supply Chain Management (GSCM) at PT PLN (Persero) Headquarters is shaped by several organizational dimensions, including information sharing, process integration, supplier relationships, technology readiness, and organizational commitment. These dimensions interact with each other in influencing how sustainability principles can be integrated into supply chain management practices, particularly in the material planning process.

First, the analysis of information sharing reveals that the exchange of material demand data among organizational units has not yet been fully standardized. Differences were observed in terms of data formats, submission schedules, and the level of detail provided by regional units. Such inconsistencies create challenges for centralized material planning and reduce the accuracy of supply chain coordination. This finding indicates the presence of information asymmetry that may hinder the implementation of GSCM, particularly in the early stages of supply chain planning. Previous studies emphasize that effective information sharing is essential for coordinating sustainable supply chain activities and ensuring transparency across organizational units [1]. Without standardized information exchange, organizations may face difficulties in aligning environmental objectives with operational planning processes.

Second, the findings related to process integration suggest that several stages of material planning and data management still rely on manual processes due to limited integration between digital systems. The reliance on manual activities increases the risk of data input errors and slows down the overall planning process. As a result, operational efficiency and coordination across units may be reduced. This observation is consistent with previous research indicating that limited process integration can hinder the effective implementation of GSCM because fragmented systems prevent organizations from managing supply chain activities in a systematic and environmentally responsible manner [19].

Third, the study finds that long-term relationships with suppliers are still primarily oriented toward fulfilling short-term operational needs rather than developing strategic sustainability partnerships. Although PLN has introduced procurement policies that encourage sustainable practices, collaborative mechanisms for aligning environmental objectives with suppliers remain limited. The literature highlights that long-term collaboration with suppliers can enhance environmental innovation and improve sustainability performance across the supply chain [7]. Therefore, strengthening strategic partnerships with suppliers could play an important role in supporting the implementation of GSCM.

Fourth, in terms of technology readiness, PLN already possesses several information systems that support supply chain management. However, these systems are not yet fully optimized to support environmental monitoring and sustainable supply chain practices. For instance, existing systems have limited capability to integrate material planning data with environmental performance indicators such as resource efficiency or emissions tracking. Previous research suggests that digital technologies function as critical enablers for GSCM by facilitating data integration, traceability, and environmental performance evaluation [20]. Therefore, further development of integrated digital systems could significantly enhance the organization's ability to implement sustainable supply chain practices.

Finally, the findings indicate that organizational commitment toward sustainability is relatively strong within PLN. This commitment is reflected in internal policies, resource allocation, and strategic initiatives related to sustainability and environmental responsibility. The support from top management plays an important role in promoting sustainability agendas across the organization. Nevertheless, strong policy commitment alone is insufficient if it is not accompanied by operational readiness at the process and system levels. This observation supports previous studies suggesting that managerial commitment must be complemented by adequate organizational capabilities in order to ensure the effective implementation of GSCM [4].

Overall, the results suggest that the readiness for implementing GSCM at PT PLN (Persero) Headquarters can be considered moderate. While the organization demonstrates strong commitment at the strategic level and possesses foundational technological infrastructure, several operational challenges remain. In particular, improvements are needed in standardizing information sharing, integrating supply chain processes, strengthening supplier collaboration, and enhancing digital system capabilities. These findings highlight that organizational readiness for GSCM is a multidimensional phenomenon that requires alignment between policy commitment, technological infrastructure, and operational practices.

## 5. Conclusion

This study aims to analyze the organizational readiness for implementing Green Supply Chain Management (GSCM) at PT PLN (Persero) Headquarters, with particular focus on material planning processes and supply chain information system integration. The findings indicate that the overall readiness for GSCM implementation within the organization can be categorized as moderate. The organization demonstrates strong commitment to sustainability through managerial support and internal policy initiatives; however, several operational and technological challenges still limit the effective implementation of GSCM practices. The study identifies several key factors influencing organizational readiness. In particular, inconsistencies in information sharing across organizational units and limited integration between digital systems represent significant barriers to effective supply chain planning and coordination. These challenges affect the accuracy of material planning and reduce the efficiency of supply chain processes. In addition, supplier relationships are still largely oriented toward fulfilling short-term operational needs rather than fostering long-term collaborative partnerships that support environmental sustainability. On the other hand, the organization already possesses foundational technological infrastructure and strong managerial commitment, which provide important opportunities for strengthening the implementation of GSCM in the future. From a practical perspective, the findings suggest the need for improving data standardization in material planning, enhancing integration among supply chain information systems, and strengthening long-term collaboration with suppliers to align operational practices with sustainability objectives. These improvements could support more effective coordination across organizational units and enable better monitoring of environmental performance within supply chain activities. From an academic perspective, this study contributes to the growing literature on Green Supply Chain Management by providing empirical insights into organizational readiness within a public sector utility context, which remains relatively underexplored compared with manufacturing industries. The findings highlight the importance of internal organizational capabilities—such as information sharing, process integration, technological readiness, and managerial commitment—in shaping the implementation of sustainable supply chain practices. Nevertheless, this study has several limitations. The research focuses on a single organization and uses a qualitative approach, which may limit the generalizability of the findings to other organizational contexts. Future research is therefore encouraged to employ mixed-method approaches or conduct comparative studies across multiple organizations, including other state-owned enterprises or infrastructure sectors, in order to develop a broader understanding of organizational readiness for implementing Green Supply Chain Management.

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