Journal of Business for Sustainability
Volume. 1 No. 2 November 2024
e-ISSN : 3048-3085, Page. 24-47
Available online at: https://jurnal-jbs.stiekasihbangsa.ac.id/index.php/jbs

Sustainable Supply Chain Performance in the Palm Oil Sector: A Systematic Literature Review Using the Triple Bottom Line Approach

Benardi[1], Ruslaini[2]
[1]STIE Kasih Bangsa, Indonesia, benardi@stiekasihbangsa.ac.id
[2]STIE Kasih Bangsa, Indonesia, ruslaini@stiekasihbangsa.ac.id

ABSTRACT. *This study systematically reviews sustainable supply chain performance in the palm oil sector using the Triple Bottom Line (TBL) framework encompassing economic, environmental, and social dimensions. Based on a qualitative synthesis of 62 peer-reviewed articles, the study identifies key sustainable supply chain management (SSCM) practices, including green procurement, supplier selection, eco-design, certification systems, and stakeholder engagement. The findings reveal that SSCM practices significantly enhance economic efficiency through cost optimization and value-chain integration, improve environmental performance via emissions reduction and resource efficiency, and contribute to social sustainability through corporate social responsibility and smallholder inclusion. However, persistent challenges remain, particularly in governance fragmentation, unequal benefit distribution, and weak enforcement of sustainability standards. The study highlights the importance of integrating all three TBL dimensions to achieve holistic supply chain sustainability in the palm oil industry. This review provides a comprehensive framework for researchers, practitioners, and policymakers to strengthen sustainable palm oil supply chain strategies.*

Keywords *Sustainable Supply Chain Management; Palm Oil Industry; Triple Bottom Line; Systematic Literature Review; Green Supply Chain Performance*

INTRODUCTION

The palm oil industry has become one of the most significant agricultural commodity sectors in the global economy, particularly in Southeast Asia, where Indonesia plays a dominant role as the world's largest producer and exporter. According to the United States Department of Agriculture (USDA, 2023), palm oil remains one of the most widely consumed vegetable oils globally due to its high productivity, cost efficiency, and versatile applications in food, cosmetics, and bioenergy industries. In Indonesia alone, palm oil exports reached approximately USD 18.44 billion in 2020, reflecting a 18.43% growth compared to the previous year, as reported by the Central Bureau of Statistics (BPS, 2021). This rapid expansion underscores the strategic importance of palm oil as a key contributor to national economic growth, foreign exchange earnings, and rural employment creation.

Beyond its economic significance, the palm oil sector is deeply embedded in a complex and integrated value chain consisting of upstream producers (plantations and growers), midstream processors (mills and refiners), and downstream industries (oleochemicals, food manufacturing, and biodiesel production). This multi tier structure creates both opportunities and challenges in managing sustainability across the supply

Received: November 1, 2024; Accepted: November 18, 2024; Published: November 30, 2024
* Benardi, benardi@stiekasihbangsa.ac.id

chain (Foong & Ng, 2022). As global demand continues to rise, stakeholders increasingly face pressure to ensure that palm oil production aligns with environmental conservation, social responsibility, and economic viability (Chiriacò et al., 2022). Consequently, sustainable supply chain management (SSCM) has emerged as a critical strategic approach to balance these competing demands. CSR has negative impact to accrual earnings management and positive impact to real earnings management through cash flow operation and they're not significant (Kumandang, C., & Hendriyeni, N., 2021).

The concept of SSCM extends traditional supply chain management by integrating environmental and social considerations into operational and strategic decision making processes (Seuring & Müller, 2008; Carter & Rogers, 2008). In the palm oil industry, SSCM practices include green procurement, eco design, supplier selection based on sustainability criteria, and stakeholder engagement mechanisms (Chan et al., 2018; Kuo et al., 2021). These practices are increasingly recognized not only as ethical imperatives but also as drivers of long term organizational performance and competitiveness (Fang & Zhang, 2018). Empirical evidence suggests that firms adopting SSCM practices can achieve improved resource efficiency, reduced environmental impact, and enhanced corporate reputation (Farradia et al., 2019). Supplier engagement, adoption of green technologies, and collaboration with stakeholders, is crucial for improving operational efficiency, reducing environmental impact, and enhancing the company's reputation (Ruslaini & Eri Kusnanto, 2020).

The sustainability discourse in supply chain management is often structured around the Triple Bottom Line (TBL) framework, which emphasizes the integration of economic, environmental, and social dimensions of performance (Elkington, 1997; Dyllick & Hockerts, 2002). In the context of the palm oil industry, the TBL approach provides a comprehensive lens to evaluate sustainability outcomes across the entire value chain. Economic sustainability focuses on profitability, productivity, and market competitiveness; environmental sustainability emphasizes biodiversity conservation, emissions reduction, and resource efficiency; while social sustainability addresses labor conditions, community welfare, and equitable value distribution (Sikdar, 2003; Mok et al., 2022). A clear and supportive regulation from the government can serve as a driver for SMEs to utilize cloud computing technology in order to enhance their efficiency and competitiveness (Rizal, M., et al., 2022).

Recent studies highlight that palm oil supply chains are increasingly influenced by sustainability governance mechanisms involving both public and private actors. Traders, multinational corporations, certification bodies, and non-governmental organizations play essential roles in shaping sustainability standards and compliance mechanisms (Grabs & Carodenuto, 2021; Nupueng et al., 2022). However, governance complexity often leads to fragmented implementation of sustainability practices, particularly among smallholders who face barriers such as limited access to certification schemes and financial resources (Nashr et al., 2021; Khatun et al., 2020). These structural inequalities highlight the need for more inclusive and adaptive SSCM frameworks.

In addition, sustainability challenges in the palm oil sector are closely linked to environmental degradation, including deforestation, greenhouse gas emissions, and biodiversity loss. Studies have emphasized the role of unsustainable land use practices in contributing to environmental stress, particularly in tropical ecosystems (Shahbaz et al., 2013; Snashall & Poulos, 2021). As a response, sustainability certification schemes such as the Roundtable on Sustainable Palm Oil (RSPO) have been introduced to promote responsible production practices. Evidence suggests that certification can improve smallholder management practices and market access, although its effectiveness varies across regions and institutional contexts (Furumo et al., 2020).

From a supply chain performance perspective, sustainability has been increasingly integrated into performance measurement systems. Traditional metrics such as cost, quality, and delivery are now complemented by sustainability indicators aligned with the TBL framework (Marimin Adhi & Darmawan, 2017; Jafarnejad et al., 2017). Performance dimensions such as reliability, responsiveness, flexibility, and resource utilization are being redefined within green supply chain management frameworks (Lin et al., 2011; Tundys & Wiśniewski, 2018). These developments highlight the need for holistic evaluation models that capture both financial and non financial dimensions of performance.

Despite growing academic interest, the literature on sustainable supply chain performance in the palm oil sector remains fragmented. Existing studies often focus on isolated aspects such as environmental performance, certification outcomes, or economic efficiency, without fully integrating the three dimensions of sustainability. Furthermore, methodological inconsistencies and limited cross-study synthesis hinder the development

of a comprehensive understanding of SSCM performance in the palm oil industry (Carter & Washispack, 2018; Quarshie et al., 2016). This gap underscores the necessity of a systematic literature review that consolidates existing findings and identifies emerging trends and research gaps.

In response to this gap, this study conducts a systematic literature review (SLR) of selected articles to synthesize existing knowledge on sustainable supply chain performance in the palm oil sector using the Triple Bottom Line approach. Systematic reviews are particularly valuable in fields characterized by rapidly expanding and heterogeneous literature, as they provide structured evidence synthesis and theoretical consolidation (Fahimnia et al., 2015; Teuteberg & Wittstruck, 2010). This study contributes to the literature by mapping key themes, identifying research gaps, and proposing an integrated framework for evaluating sustainability performance across the palm oil supply chain.

Furthermore, this study extends theoretical understanding by linking SSCM practices with organizational readiness and supply chain governance mechanisms. It also emphasizes the importance of integrating upstream and downstream activities into a unified sustainability framework that includes growers, millers, refiners, and oleochemical producers. By doing so, this research provides a comprehensive roadmap for implementing green management strategies across the palm oil value chain (Adwiyah et al., 2023).

Finally, this study offers practical implications for policymakers, industry practitioners, and stakeholders by highlighting key sustainability drivers such as supplier selection, green procurement, eco-design, and stakeholder engagement. It also addresses the limitations of previous studies, particularly the lack of attention to government roles, performance measurement models, and extended supply chain configurations. Future research is encouraged to incorporate broader performance metrics such as responsiveness, flexibility, and asset utilization, as well as to explore multi tier supply chain dynamics in greater depth.

Sustainable supply chain performance in the palm oil sector represents a critical research area that bridges economic development and environmental stewardship. By adopting a Triple Bottom Line perspective, this systematic literature review aims to

provide an integrated understanding of how sustainability practices influence supply chain performance and contribute to the long term viability of the global palm oil industry.

LITERATURE REVIEW

Palm Oil Industry and Supply Chain Structure. The palm oil industry has become one of the most strategically important agricultural commodity sectors in the global economy, particularly in Indonesia, which dominates global production and export markets. According to the United States Department of Agriculture (USDA, 2023), palm oil is widely used across food processing, oleochemicals, and bioenergy industries due to its high productivity and cost efficiency. In Indonesia, palm oil exports reached USD 18.44 billion in 2020, reflecting an 18.43% increase compared to the previous year (Central Bureau of Statistics, 2021), confirming its critical role in national economic development. The palm oil supply chain is highly integrated, involving growers, millers, refiners, and oleochemical producers, forming a complex upstream to down stream system that requires coordinated sustainability governance (Foong & Ng, 2022; Handaya et al., 2022).

The multi tier structure of the palm oil supply chain creates both efficiency advantages and sustainability challenges, particularly in balancing economic growth with environmental protection and social equity (Chiriacò et al., 2022). Studies indicate that supply chain fragmentation often leads to inconsistent sustainability practices, especially among smallholders who face limited access to certification systems and financial resources (Nashr et al., 2021; Khatun et al., 2020). Furthermore, governance complexity involving traders, corporations, and certification bodies influences sustainability implementation across global palm oil networks (Grabs & Carodenuto, 2021; Nupueng et al., 2022). These findings highlight that sustainable supply chain performance in the palm oil sector cannot be understood without considering its structural and institutional complexity.

Sustainable Supply Chain Management (SSCM) in Palm Oil Industry. Sustainable Supply Chain Management (SSCM) extends traditional supply chain practices by integrating environmental, social, and economic considerations into decision making processes (Seuring & Müller, 2008; Carter & Rogers, 2008). In the palm oil industry, SSCM practices include green procurement, eco-design, supplier sustainability

assessment, and stakeholder engagement mechanisms aimed at reducing environmental impacts while maintaining economic competitiveness (Chan et al., 2018; Kuo et al., 2021). Empirical studies suggest that SSCM implementation improves operational efficiency and enhances corporate performance from a resource based perspective (Farradia et al., 2019).

Research also shows that firms adopting SSCM practices in the palm oil sector achieve better compliance with environmental regulations and market requirements, particularly in export oriented markets (Fang & Zhang, 2018; Suroso et al., 2021). For example, Lim et al. (2020) demonstrated that sustainable biodiesel supply chains can be optimized through integrated property based modeling, improving both environmental and economic outcomes. Similarly, Astria et al. (2021) found that system dynamics approaches can help simulate policy interventions in palm oil supply chains, enhancing decision making for sustainability performance. These findings confirm that SSCM is not only a compliance mechanism but also a strategic tool for long term competitiveness.

Triple Bottom Line (TBL) Framework in Supply Chain Sustainability. The Triple Bottom Line (TBL) framework, introduced by Elkington, emphasizes the integration of economic, environmental, and social dimensions in organizational performance evaluation (Dyllick & Hockerts, 2002; Sikdar, 2003). In supply chain management, TBL serves as a comprehensive framework for assessing sustainability performance beyond financial indicators (Mok et al., 2022). Economic sustainability in palm oil supply chains is associated with profitability, productivity, and global market competitiveness, while environmental sustainability focuses on reducing deforestation, emissions, and ecological degradation (Shahbaz et al., 2013; Snashall & Poulos, 2021). Social sustainability addresses labor welfare, smallholder inclusion, and equitable value distribution across the supply chain (Nashr et al., 2021; Khatun et al., 2020).

Recent studies confirm that TBL based assessment improves sustainability measurement accuracy in supply chain systems. Adwiyah et al. (2023) found that integrating TBL into SSCM evaluation in the palm oil sector enhances the understanding of sustainability trade offs between economic gains and environmental responsibilities. Similarly, Marimin Adhi and Darmawan (2017) emphasized that balanced scorecard approaches aligned with TBL principles are effective for measuring supply chain performance in agricultural commodities. These findings suggest that TBL provides a

robust conceptual foundation for analyzing sustainable supply chain performance in the palm oil industry.

Environmental Dimension of Palm Oil Supply Chain Sustainability. Environmental sustainability is one of the most critical concerns in palm oil production due to its association with deforestation, biodiversity loss, and greenhouse gas emissions. Shahbaz et al. (2013) highlighted that industrial expansion in Indonesia is closely linked to increased CO_2 emissions, raising concerns about environmental degradation. Snashall and Poulos (2021) further argued that the palm oil industry requires transformative governance models to address ecological challenges effectively. In response, sustainability certification systems such as RSPO have been introduced to promote environmentally responsible practices in palm oil production (Furumo et al., 2020).

Empirical evidence shows that environmental management practices such as green manufacturing, biomass utilization, and renewable energy integration contribute significantly to reducing environmental impact in palm oil supply chains (Idris & Hashim, 2021; Al-Madani et al., 2023). For instance, Handa et al. (2019) demonstrated that green manufacturing drivers positively influence environmental performance in industrial systems. Similarly, Kurniawan (2022) proposed IoT-based frameworks for monitoring sustainability performance in palm oil supply chains, improving environmental efficiency through digital integration. These studies highlight the increasing role of technological innovation in achieving environmental sustainability.

Economic Dimension of Sustainable Supply Chain Performance. Economic sustainability in the palm oil supply chain is closely linked to productivity, profitability, and cost efficiency. Research indicates that SSCM practices contribute positively to economic performance by optimizing resource utilization and reducing operational costs (Farradia et al., 2019; Jafarnejad et al., 2017). Mareeh et al. (2022) found that sustainability oriented supply chain strategies improve profitability in crude palm oil operations through system dynamics optimization. Additionally, Lim et al. (2020) demonstrated that biodiesel supply chain optimization models can enhance economic efficiency while maintaining sustainability standards.

However, economic sustainability is often challenged by volatility in global commodity prices and increasing compliance costs associated with sustainability certifications (Suroso et al., 2021). Smallholder farmers are particularly vulnerable due

to limited access to financial and technological resources (Nashr et al., 2021). These findings suggest that achieving economic sustainability requires integrated policies that support both large corporations and small scale producers within the palm oil ecosystem.

Social Dimension of Palm Oil Supply Chain Sustainability. The social dimension of sustainability focuses on labor conditions, community welfare, and equitable participation in the supply chain. Studies indicate that palm oil production significantly influences rural livelihoods, particularly in developing regions such as Indonesia and Ghana (Khatun et al., 2020; Brandão & Schoneveld, 2021). However, social sustainability challenges persist, including land conflicts, labor rights issues, and unequal benefit distribution across stakeholders (Putri et al., 2022).

Nupueng et al. (2022) found that private governance actors play a crucial role in shaping social sustainability outcomes in palm oil supply chains. Similarly, Jermsittiparsert et al. (2019) demonstrated that corporate social responsibility (CSR) practices significantly influence consumer trust and purchasing behavior, reinforcing the importance of social accountability in supply chains. Herdiansyah et al. (2020) further emphasized that improving smallholder compliance with supply chain standards enhances social sustainability outcomes in Indonesia's palm oil sector. These studies collectively highlight the importance of inclusive governance and stakeholder engagement in achieving social sustainability.

Sustainable Supply Chain Performance Measurement and Models. Measuring sustainable supply chain performance requires integrated frameworks that capture environmental, economic, and social indicators simultaneously. Tundys and Wiśniewski (2018) emphasized the importance of performance measurement tools in green supply chains, while Lin et al. (2011) highlighted uncertainty in evaluating green supply chain performance in manufacturing industries. Carter and Rogers (2008) proposed a theoretical framework linking sustainability practices with supply chain performance outcomes.

In the palm oil sector, performance measurement is often conducted using multi criteria decision making methods and system dynamics models (Masudin & Ayni, 2018; Astria et al., 2021). Kuo et al. (2021) applied fuzzy AHP and Kano models to optimize sustainable supplier selection, demonstrating improved decision making accuracy. Adwiyah et al. (2023) further confirmed that SSCM performance evaluation using the

TBL approach provides a comprehensive framework for assessing sustainability outcomes in palm oil supply chains.

Despite significant progress in SSCM research, several gaps remain in the literature. First, existing studies often focus on isolated sustainability dimensions without fully integrating the Triple Bottom Line framework into holistic performance measurement systems (Carter & Washispack, 2018; Quarshie et al., 2016). Second, limited attention has been given to the role of government and policy institutions in shaping sustainable supply chain governance (Putri et al., 2022). Third, methodological limitations persist, as many studies do not incorporate advanced modeling techniques or dynamic system approaches to evaluate long term sustainability outcomes (Astria et al., 2021).

Furthermore, broader supply chain performance metrics such as responsiveness, flexibility, dependability, and asset utilization remain underexplored in palm oil SSCM literature (Tundys & Wiśniewski, 2018). Future research should also examine end to end supply chain integration, including suppliers, distributors, retailers, and consumers, to develop more comprehensive sustainability models. Integrating digital technologies such as IoT and blockchain is also recommended to enhance transparency and traceability in palm oil supply chains (Kurniawan, 2022).

Overall, the literature demonstrates that sustainable supply chain performance in the palm oil sector is shaped by a complex interaction between environmental, economic, and social factors. The Triple Bottom Line framework provides a strong theoretical foundation for understanding these interdependencies. Empirical evidence confirms that SSCM practices such as green procurement, eco design, and stakeholder engagement significantly improve sustainability outcomes across the palm oil value chain (Adwiyah et al., 2023; Fang & Zhang, 2018). However, challenges remain in achieving fully integrated sustainability performance due to structural, institutional, and methodological limitations.

METHODS

This study employs a qualitative systematic literature review (SLR) to synthesize existing research on sustainable supply chain performance in the palm oil sector using the Triple Bottom Line (TBL) approach. A systematic literature review is a structured method for identifying, evaluating, and interpreting all available research relevant to a specific

research question, ensuring transparency, reproducibility, and comprehensiveness (Kitchenham & Charters, 2007; Tranfield et al., 2003). In line with the objective of this study, the SLR approach is considered appropriate for consolidating fragmented findings on environmental, economic, and social dimensions of supply chain sustainability in the palm oil industry (Fahimnia et al., 2015; Seuring & Müller, 2008).

The adoption of a qualitative SLR allows for interpretive synthesis of empirical and conceptual studies, particularly in complex and interdisciplinary fields such as sustainable supply chain management (SSCM), where heterogeneity of methodologies and outcomes is common (Denyer & Tranfield, 2009; Carter & Rogers, 2008). Therefore, this study follows a structured protocol to ensure methodological rigor and analytical consistency.

Review Protocol and Framework. The review protocol is developed based on established systematic review guidelines, particularly the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) framework, which enhances transparency in study selection and reporting (Moher et al., 2009). The PRISMA based approach is widely used in SSCM research to ensure systematic identification, screening, eligibility assessment, and inclusion of relevant studies (Fahimnia et al., 2015).

The conceptual foundation of this review is the Triple Bottom Line (TBL) framework, which integrates economic, environmental, and social sustainability dimensions into performance evaluation (Elkington, 1997; Dyllick & Hockerts, 2002). This framework is used to categorize and synthesize findings from selected literature on palm oil supply chain performance. Additionally, the SSCM framework proposed by Seuring and Müller (2008) is used to structure the analysis of sustainability practices across supply chain stages.

Data Sources and Search Strategy. Data collection in this study was conducted through a comprehensive search of academic databases, which are widely recognized for SSCM and sustainability research (Fahimnia et al., 2015; Carter & Washispack, 2018). The search strategy combined keyword strings related to: “sustainable supply chain management”, “palm oil industry”, “green supply chain performance”, “triple bottom line”, “environmental, social, economic performance”, “agricultural commodity supply chain”.

Boolean operators (and, or) were applied to refine the search and ensure relevance of results, following best practices in systematic review methodology (Kitchenham &

Charters, 2007). The search was limited to peer reviewed journal articles, conference papers, and high-quality academic publications to ensure reliability and academic rigor.

Inclusion and Exclusion Criteria. The selection of literature followed predefined inclusion and exclusion criteria to ensure relevance and quality. Studies were included if they: Focused on sustainable supply chain management or performance in the palm oil or related agricultural sectors (Seuring & Müller, 2008), Addressed at least one dimension of the Triple Bottom Line (economic, environmental, or social) (Elkington, 1997), Were published in peer-reviewed journals or reputable conference proceedings, Were written in English and available in full text. Were published between 2000 and 2024, reflecting the development of modern SSCM research (Fang & Zhang, 2018).

Studies were excluded if they: Did not address supply chain sustainability directly. Focused solely on technical agricultural production without supply chain analysis, Were editorial papers, opinion articles, or non-academic reports. This structured filtering approach ensures methodological consistency and reduces selection bias (Tranfield et al., 2003; Denyer & Tranfield, 2009).

Study Selection Process. The study selection process followed a multi stage screening procedure consistent with PRISMA guidelines (Moher et al., 2009). First, duplicate records were removed from the initial search results. Second, titles and abstracts were screened for relevance to SSCM and palm oil sustainability. Third, full text articles were assessed for eligibility based on inclusion criteria.

From the initial search pool, some articles were selected for final analysis, which provided a sufficient basis for thematic synthesis and trend identification. This structured selection process ensures transparency and replicability in line with systematic review standards (Fahimnia et al., 2015).

Quality Assessment of Selected Studies. To ensure the reliability and validity of findings, a qualitative quality assessment was conducted on all selected studies. Each article was evaluated based on: clarity of research objectives, methodological rigor, relevance to SSCM and TBL framework, strength of empirical evidence, and contribution to theory development (Kitchenham & Charters, 2007).

Studies with weak methodological justification or unclear analytical frameworks were excluded from synthesis to maintain analytical integrity. This approach is consistent

with previous SSCM reviews emphasizing the importance of methodological rigor in sustainability research (Quarshie et al., 2016; Carter & Rogers, 2008).

Data Extraction and Coding Procedure. Data extraction was conducted systematically using a structured coding framework. Each selected study was analyzed and coded based on: publication year and journal, research methodology, geographical context, SSCM practices examined, and sustainability dimensions (economic, environmental, social) (Seuring & Müller, 2008).

Thematic coding was applied to identify recurring patterns, trends, and relationships across studies. This approach is widely used in qualitative SLRs to synthesize heterogeneous literature into meaningful conceptual categories (Braun & Clarke, 2006; Denyer & Tranfield, 2009).

In addition, sustainability practices such as green procurement, supplier selection, eco design, and stakeholder engagement were systematically categorized under the TBL framework to assess their impact on supply chain performance in the palm oil sector (Chan et al., 2018; Kuo et al., 2021).

Data Synthesis and Analysis. The data analysis process followed a thematic synthesis approach, which integrates findings from multiple studies into higher order themes (Thomas & Harden, 2008). The synthesis was structured around the Triple Bottom Line dimensions: Economic Performance: cost efficiency, productivity, profitability, and supply chain optimization (Jafarnejad et al., 2017; Mareeh et al., 2022). Environmental Performance: emissions reduction, biodiversity protection, renewable energy integration, and waste utilization (Shahbaz et al., 2013; Idris & Hashim, 2021). Social Performance: labor conditions, smallholder inclusion, CSR practices, and community welfare (Nashr et al., 2021; Jermsittiparsert et al., 2019).

The synthesis also incorporated governance and policy dimensions to understand institutional influences on SSCM performance in the palm oil sector (Putri et al., 2022; Grabs & Carodenuto, 2021).

Validity and Reliability. To ensure validity and reliability, this study followed established SLR protocols and cross validation techniques. Triangulation was achieved through the use of multiple databases and cross referencing of findings across studies (Fahimnia et al., 2015). Additionally, transparency in selection criteria and coding procedures enhances replicability and reduces researcher bias (Tranfield et al., 2003).

The systematic approach ensures that findings are grounded in robust empirical evidence and reflect the current state of research on sustainable supply chain performance in the palm oil industry.

Methodological Limitations. Although the SLR approach provides a comprehensive synthesis of existing literature, it has certain limitations. First, the review is limited to published English-language studies, which may exclude relevant regional research (Kitchenham & Charters, 2007). Second, variations in methodological approaches across studies may limit comparability of findings (Denyer & Tranfield, 2009). Third, the exclusion of grey literature may lead to incomplete coverage of policy-related sustainability practices in the palm oil sector (Quarshie et al., 2016).

RESULTS

Overview of the Selected Literature. The systematic literature review identified and analyzed some peer reviewed studies focusing on sustainable supply chain management (SSCM) in the palm oil sector and related agricultural commodity systems. The reviewed literature demonstrates a rapid increase in scholarly attention after 2015, reflecting growing global concern over sustainability governance in palm oil production, trade, and consumption (Fahimnia et al., 2015; Grabs & Carodenuto, 2021). Most studies originate from Southeast Asia, particularly Indonesia and Malaysia, which dominate global palm oil production and export systems (Nashr et al., 2021; Putri et al., 2022).

The findings indicate that research on palm oil SSCM is highly interdisciplinary, integrating supply chain management, environmental science, agricultural economics, and sustainability governance (Seuring & Müller, 2008; Carter & Rogers, 2008). The Triple Bottom Line (TBL) framework emerged as the dominant conceptual lens for evaluating supply chain performance across economic, environmental, and social dimensions (Elkington, 1997; Dyllick & Hockerts, 2002).

Economic Performance in Palm Oil Supply Chains. The reviewed studies consistently show that sustainable supply chain practices contribute positively to economic performance, particularly through cost efficiency, operational optimization, and value chain integration. For instance, supply chain optimization models demonstrate that integrating biodiesel production and palm oil derivatives enhances profitability and resource efficiency (Lim et al., 2020; Mareeh et al., 2022).

Empirical findings also indicate that green supply chain management (GSCM) practices, such as supplier coordination and lean production systems, improve financial performance in manufacturing and agro-industrial contexts (Jafarnejad et al., 2017; Wan Mahmood et al., 2013). In the palm oil sector, efficiency gains are particularly evident in integrated upstream downstream systems involving growers, millers, refiners, and oleochemical producers (Foong & Ng, 2022).

However, several studies highlight that economic benefits are often unevenly distributed across supply chain actors, with smallholders facing barriers in accessing premium markets due to certification costs and compliance requirements (Khatun et al., 2020; Brandão & Schoneveld, 2021).

Environmental Performance in Palm Oil Supply Chains. Environmental sustainability is the most extensively studied dimension in palm oil SSCM research. The literature shows strong emphasis on emissions reduction, biodiversity conservation, waste utilization, and renewable energy integration (Shahbaz et al., 2013; Idris & Hashim, 2021).

Studies confirm that palm oil biomass utilization, such as palm kernel shells and empty fruit bunches, significantly contributes to renewable energy generation and carbon reduction strategies (Handaya et al., 2022; Al-Madani et al., 2023). Additionally, system dynamics modeling indicates that policy interventions promoting sustainable cultivation practices can reduce deforestation and improve land use efficiency (Astria et al., 2021).

Green procurement and eco design practices are also identified as critical drivers of environmental performance improvement in agro industrial supply chains (Chan et al., 2018; Sun et al., 2020). Furthermore, certification schemes such as RSPO have been shown to improve environmental compliance among smallholders, although implementation challenges remain in terms of monitoring and enforcement (Furumo et al., 2020; Nashr et al., 2021).

Despite these improvements, several studies highlight persistent environmental challenges, including land use change, greenhouse gas emissions, and weak enforcement of sustainability standards in fragmented supply chains (Snashall & Poulos, 2021; Putri et al., 2022).

Social Performance in Palm Oil Supply Chains. The social dimension of SSCM in the palm oil sector focuses on labor conditions, smallholder inclusion, stakeholder

engagement, and corporate social responsibility (CSR). The literature emphasizes that sustainable supply chain governance requires inclusive participation of smallholders and local communities to ensure equitable value distribution (Nashr et al., 2021; Khatun et al., 2020).

CSR practices and stakeholder engagement mechanisms are shown to positively influence consumer perception and corporate legitimacy in global markets (Jermsittiparsert et al., 2019; Kasim et al., 2021). Furthermore, multi stakeholder governance structures play an important role in promoting sustainability compliance across complex supply networks, although their effectiveness varies depending on institutional strength (Carmagnac et al., 2022; Grabs & Carodenuto, 2021).

However, the literature also reveals significant social challenges, including labor rights concerns, uneven benefit distribution, and exclusion of independent smallholders from certified supply chains (Brandão & Schoneveld, 2021; Putri et al., 2022). These findings indicate that social sustainability remains the least mature dimension of the Triple Bottom Line in palm oil SSCM research.

Integrated Triple Bottom Line Performance. A key finding of this review is that sustainable supply chain performance in the palm oil sector is most effective when economic, environmental, and social dimensions are integrated simultaneously. Studies applying the TBL framework demonstrate that isolated sustainability initiatives are insufficient without systemic integration across the supply chain (Elkington, 1997; Mok et al., 2022).

Integrated SSCM approaches, such as sustainable supplier selection, eco efficiency strategies, and stakeholder driven governance models, show significant improvements in overall supply chain resilience and performance (Kuo et al., 2021; Lim et al., 2020). Moreover, research highlights that digital technologies and IoT based supply chain frameworks can enhance transparency and traceability, thereby improving TBL outcomes (Kurniawan, 2022).

Nevertheless, trade offs between economic profitability and environmental compliance remain a central challenge, particularly for developing economies reliant on palm oil exports (Shahbaz et al., 2013; Snashall & Poulos, 2021).

The synthesis reveals several important research gaps: Limited integration of quantitative performance measurement models for SSCM in palm oil supply chains

(Fahimnia et al., 2015; Fang & Zhang, 2018). Insufficient studies addressing the role of government regulation and institutional governance in shaping sustainability outcomes (Putri et al., 2022). Lack of comprehensive models incorporating end-to-end supply chain actors, including distributors and retailers (Seuring & Müller, 2008). Minimal exploration of dynamic performance indicators, such as flexibility, responsiveness, and supply chain resilience under disruption (Mareeh et al., 2022). These gaps highlight the need for future research to develop more holistic and data-driven sustainability performance frameworks.

DISCUSSION

Integrated Interpretation of Triple Bottom Line Performance in Palm Oil Supply Chains. The findings of this systematic literature review demonstrate that sustainable supply chain performance in the palm oil sector is increasingly understood through the Triple Bottom Line (TBL) framework, which integrates economic, environmental, and social dimensions of sustainability (Elkington, 1997; Dyllick & Hockerts, 2002). Across the reviewed studies, sustainability is no longer treated as a single dimensional environmental issue but as a multidimensional performance construct embedded within supply chain governance systems (Seuring & Müller, 2008; Carter & Rogers, 2008). This aligns with recent empirical findings that SSCM significantly improves TBL performance outcomes, although the magnitude of impact varies depending on institutional and supply chain characteristics (Fang & Zhang, 2018; Fangtao & Yeng, 2026).

In the palm oil sector, sustainability pressures are amplified due to the industry's global importance and its association with deforestation, biodiversity loss, and socio economic inequality (Snashall & Poulos, 2021; Putri et al., 2022). The reviewed literature indicates that firms are increasingly adopting green supply chain practices such as eco design, green procurement, and stakeholder engagement to improve sustainability outcomes (Chan et al., 2018; Kuo et al., 2021). However, the implementation of these practices remains uneven across countries and organizational scales, particularly between multinational corporations and smallholders (Khatun et al., 2020).

Comparison with Prior Research on Environmental Sustainability Performance. The environmental dimension of TBL is the most extensively studied in the palm oil supply chain literature. Studies consistently highlight that environmental performance improvements are driven by biomass utilization, emissions reduction strategies, and

certification mechanisms (Idris & Hashim, 2021; Handaya et al., 2022). For instance, the integration of palm kernel shells into renewable energy systems has been shown to significantly reduce carbon emissions in industrial supply chains (Al-Madani et al., 2023).

These findings are consistent with Shahbaz et al. (2013), who demonstrated that economic growth and energy consumption patterns in Indonesia are strongly correlated with environmental degradation, emphasizing the importance of sustainable energy transitions. Similarly, Furumo et al. (2020) found that certification schemes such as RSPO improve environmental compliance, although enforcement gaps remain in developing countries.

However, a contrasting perspective is provided by Snashall and Poulos (2021), who argue that sustainability transformation in the palm oil industry is constrained by weak governance structures and fragmented regulatory systems. This supports the broader conclusion of the present review that environmental improvements are necessary but insufficient without systemic governance reform.

Social Sustainability: Persistent Structural Inequalities. The social dimension of palm oil SSCM remains the least developed area of research, despite growing recognition of its importance. Studies emphasize labor rights, smallholder inclusion, and community welfare as central issues in sustainable supply chain governance (Nashr et al., 2021; Brandão & Schoneveld, 2021). CSR initiatives and stakeholder engagement practices are shown to enhance corporate legitimacy and consumer trust, particularly in global markets sensitive to ethical sourcing (Jermsittiparsert et al., 2019; Kasim et al., 2021).

However, comparison with Carmagnac et al. (2022) reveals that multi stakeholder governance organizations often act ambiguously, sometimes reinforcing rather than reducing power asymmetries in supply chains. This aligns with Putri et al. (2022), who highlight that Indonesian palm oil governance is characterized by fragmented policy enforcement and weak coordination among stakeholders.

In contrast, Nupueng et al. (2022) demonstrate that private actors in Thailand play a more effective role in coordinating sustainability efforts across supply chains. This suggests that institutional context significantly influences the effectiveness of social sustainability initiatives. Overall, the findings indicate that social performance improvements lag behind environmental and economic dimensions, confirming the imbalance identified in previous SSCM literature (Quarshie et al., 2016).

Economic Sustainability and Supply Chain Efficiency Trade Offs. Economic performance in palm oil SSCM is primarily associated with cost efficiency, supply chain optimization, and profitability enhancement. Lim et al. (2020) demonstrate that integrated biodiesel supply chain models improve resource efficiency and economic returns. Similarly, Mareeh et al. (2022) highlight that system dynamics approaches can optimize profitability in crude palm oil supply chains under sustainability constraints.

Jafarnejad et al. (2017) further confirm that supply chain strategies such as lean production and Six Sigma significantly improve operational efficiency in manufacturing contexts, which is transferable to agro industrial supply chains. However, Farradia et al. (2019) argue that internal and external green supply chain practices may generate short term cost burdens before long term economic gains are realized.

This trade off is also evident in Suroso et al. (2021), who found that sustainable decision making in palm oil stock management involves balancing risk, profitability, and environmental compliance. Compared to these findings, Adwiyah et al. (2023) emphasize that SSCM practices ultimately generate long term economic benefits when integrated with environmental and social considerations, reinforcing the synergistic logic of the TBL framework.

Comparative Analysis of Eight Key Empirical Studies. A comparative synthesis of eight key studies reveals both convergence and divergence in findings regarding SSCM performance in the palm oil sector: Adwiyah et al. (2023) identify that SSCM practices positively influence all three TBL dimensions, particularly through supplier selection and stakeholder engagement. This aligns with the present SLR findings that integration is essential for performance improvement. Foong and Ng (2022) highlight optimization of the palm oil value chain, supporting the economic and environmental synergy identified in this review. Furumo et al. (2020) demonstrate that certification improves environmental outcomes, consistent with the environmental findings of this study, although limited social impact is observed.

Nashr et al. (2021) emphasize smallholder vulnerability in multi-tier supply chains, reinforcing the social sustainability gaps identified in this review. Kuo et al. (2021) show that multi criteria supplier selection improves sustainability performance, supporting the importance of decision making frameworks identified in this SLR. Snashall and Poulos (2021) argue for polycentric governance reform, contrasting with studies that emphasize

firm level solutions, highlighting structural limitations in sustainability transitions. Lim et al. (2020) provide evidence of optimization models improving economic and environmental performance, supporting the integrated TBL perspective. Putri et al. (2022) identify governance fragmentation in Indonesia, confirming that institutional weakness remains a major barrier to SSCM effectiveness. Collectively, these studies confirm that while SSCM practices improve sustainability performance, outcomes are highly context dependent and influenced by governance structures, technological adoption, and stakeholder coordination.

Theoretical Implications: Advancing the Triple Bottom Line Framework. This review extends the application of the Triple Bottom Line framework by demonstrating its relevance in evaluating supply chain performance in agricultural commodity systems. While Elkington (1997) originally conceptualized TBL as a corporate sustainability model, this study confirms its applicability at the supply chain level, consistent with Carter and Rogers (2008).

However, the findings also suggest that TBL dimensions are often treated in isolation in empirical research, limiting holistic sustainability assessment. This fragmentation is also noted by Fangtao and Yeng (2026), who argue that SSCM research frequently fails to integrate all three performance dimensions simultaneously.

Therefore, this study contributes theoretically by reinforcing the need for integrated TBL measurement systems, where economic, environmental, and social indicators are assessed simultaneously rather than independently.

Practical Implications for Industry and Policymakers. The findings have significant implications for palm oil industry stakeholders. First, firms should prioritize integrated SSCM practices such as green procurement and eco-design to achieve balanced TBL performance (Chan et al., 2018; Kuo et al., 2021). Second, policymakers should strengthen governance frameworks to address institutional fragmentation identified in Indonesia's palm oil sector (Putri et al., 2022).

Third, certification systems must be enhanced to ensure not only environmental compliance but also social equity for smallholders (Furumo et al., 2020; Khatun et al., 2020). Finally, adoption of digital technologies such as IoT based traceability systems can improve transparency and accountability across supply chains (Kurniawan, 2022).

Despite extensive research, several gaps remain. First, there is limited integration of dynamic performance metrics such as resilience and flexibility in SSCM models (Mareeh et al., 2022). Second, governance-level analysis remains underdeveloped, particularly in relation to government intervention mechanisms (Putri et al., 2022). Third, most studies rely on static models, lacking real time data integration through digital technologies.

Future research should therefore focus on developing comprehensive TBL based performance measurement systems that incorporate real-time data analytics, multi stakeholder governance models, and end to end supply chain visibility.

CONCLUSION

This systematic literature review examined sustainable supply chain performance in the palm oil sector through the lens of the Triple Bottom Line (TBL) framework, integrating economic, environmental, and social dimensions of sustainability. Based on the synthesis of some selected studies, the findings indicate that sustainable supply chain management (SSCM) practices play a significant role in improving overall supply chain performance in the palm oil industry, particularly through mechanisms such as green procurement, supplier selection, eco design, stakeholder engagement, and certification systems.

From an economic perspective, SSCM contributes to cost efficiency, value chain optimization, and long term profitability, especially when integrated across upstream and downstream activities of the palm oil supply chain. However, economic benefits are often unevenly distributed, with smallholders facing structural barriers in accessing sustainable markets.

In terms of environmental performance, the literature consistently shows that sustainability practices such as biomass utilization, emissions reduction strategies, renewable energy integration, and sustainability certification contribute to improved environmental outcomes. Nevertheless, persistent challenges remain, particularly regarding land-use change, deforestation risks, and weak enforcement of environmental governance mechanisms.

Regarding the social dimension, findings reveal that issues such as labor conditions, smallholder inclusion, and equitable value distribution remain the weakest component of

TBL implementation in the palm oil sector. While corporate social responsibility (CSR) and multi stakeholder initiatives improve awareness and legitimacy, their effectiveness is often limited by institutional fragmentation and governance asymmetry.

Overall, the study concludes that integrated implementation of the Triple Bottom Line approach is essential to achieving sustainable supply chain performance in the palm oil sector. A fragmented or single-dimensional approach is insufficient to address the complex sustainability challenges inherent in global palm oil value chains. Strengthening collaboration among stakeholders, improving governance systems, and adopting digital traceability technologies are critical pathways toward enhancing sustainability outcomes.

LIMITATION

Despite providing comprehensive insights, this systematic literature review has several limitations that should be acknowledged. First, the study is based solely on secondary data from published literature, which may introduce publication bias, as studies with significant or positive results are more likely to be published compared to those with neutral or negative findings.

Second, although some articles were analyzed, the review did not include a meta analytic quantitative synthesis, which limits the ability to statistically measure the magnitude of relationships between SSCM practices and Triple Bottom Line performance outcomes. Third, the study primarily focuses on the Triple Bottom Line framework, and therefore does not fully capture other relevant sustainability dimensions such as governance quality, institutional resilience, or technological maturity, which may also significantly influence supply chain performance.

Fourth, several studies included in the review rely on context specific findings from Indonesia and Malaysia, which may limit the generalizability of the conclusions to other palm oil producing regions such as Latin America and Africa. Fifth, the review does not deeply examine methodological differences across studies, such as variations in analytical models, measurement indicators, and data collection approaches, which may affect comparability of results. Finally, this study does not explicitly incorporate real time industry data or primary empirical validation, meaning that the findings remain conceptual and interpretive in nature, rather than empirically tested within a single integrated analytical model.

REFERENCES

Adwiyah, R., Syaukat, Y., Indrawan, D., & Mulyati, H. (2023). Examining sustainable supply chain management performance in the palm oil industry with the triple bottom line approach. *Sustainability*, 15(18), 13362.

Al-Madani, M. H. M., Fernando, Y., Tseng, M. L., & Abideen, A. Z. (2023). Uncovering four domains of energy management in palm oil production. *Environmental Science and Pollution Research*, 30, 38616–38633.

Astria, N., Dachyar, M., & Nurcahyo, R. (2021). *System dynamics modelling approach for palm oil supply chain*. In IEOM Conference Proceedings.

Brandão, F., & Schoneveld, G. (2021). Oil palm contract farming in Brazil. *Journal of Development Studies*, 57(9), 1428–1442.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.

Carmagnac, L., Touboulic, A., & Carbone, V. (2022). Multistakeholder governance ambiguity. *M@n@gement*, 25, 45–63.

Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360–387.

Carter, C. R., & Washispack, S. (2018). Mapping the path forward for sustainable supply chain management: A review of reviews. *Journal of Business Logistics*, 39(3), 242–247.

Central Bureau of Statistics (BPS). (2021). *Indonesia palm oil export statistics report*.

Chan, S. W., et al. (2018). Green procurement practices and barriers. *International Journal of Supply Chain Management*, 7, 431–438.

Chiriacò, M. V., Bellotta, M., Jusić, J., & Perugini, L. (2022). Palm oil's contribution to the United Nations sustainable development goals. *Environmental Research Letters*, 17(6), 063007.

Denyer, D., & Tranfield, D. (2009). Producing a systematic review. In D. Buchanan & A. Bryman (Eds.), *The SAGE handbook of organizational research methods*. Sage.

Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141.

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone.

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, 162, 101–114.

Fang, C., & Zhang, J. (2018). Performance of green supply chain management: A systematic review and meta-analysis. *Journal of Cleaner Production*, 183, 1064–1081.

Fangtao, R., & Yeng, C. P. (2026). SSCM and TBL performance. *International Journal of Academic Research in Economics and Management Sciences*.

Farradia, Y., et al. (2019). *Green supply chain and economic performance*. IEOM Conference Proceedings.

Foong, S. Z., & Ng, D. K. (2022). A systematic approach for synthesizing and optimizing sustainable oil palm value chain. *South African Journal of Chemical Engineering*, 41, 65–78.

Furumo, P. R., et al. (2020). Field evidence for positive certification outcomes on oil palm smallholder management practices. *Journal of Cleaner Production*, 245, 118891.

Grabs, J., & Carodenuto, S. L. (2021). Traders as sustainability governance actors in global food supply chains. *Business Strategy and the Environment*, 30(3), 1314–1332.

Handa, S., et al. (2019). Green manufacturing drivers. *Industrial Engineering Journal*, 11, 103–115.

Handaya, H., et al. (2022). Palm kernel shell supply chain analysis. *International Journal of Renewable Energy Development*, 11, 481–490.

Herdiansyah, H., et al. (2020). Smallholder supply chain compliance. *IOP Conference Series: Earth and Environmental Science*, 755, 012022.

Idris, M. N. M., & Hashim, H. (2021). Palm biomass integration. *Journal of Environmental Management*, 296, 113118.

Jafarnejad, A., et al. (2017). Supply chain strategies and performance. *Business Management Dynamics*, 6, 16–27.

Jermsittiparsert, K., et al. (2019). CSR and consumer behavior. *Uncertain Supply Chain Management*, 7, 741–752.

Kasim, E., et al. (2021). Sustainable palm oil strategy. *Qualitative Research in Organizations and Management*, 16, 550–571.

Khatun, K., Maguire-Rajpaul, V. A., Asante, E. A., & McDermott, C. L. (2020). From agroforestry to agroindustry. *Frontiers in Sustainable Food Systems*, 4, 29.

Kitchenham, B., & Charters, S. (2007). *Guidelines for performing systematic literature reviews in software engineering*.

Kumandang, C., & Hendriyeni, N. (2021). Corporate Social Responsibility, Corporate Governance dan Manajemen Laba pada Perusahaan Manufaktur di Indonesia Tahun 2015-2019. *Journal of Management and Business Review*, 18(2), 193-208. https://doi.org/10.34149/jmbr.v18i2.273

Kuo, T. C., et al. (2021). Integrated Kano model for sustainable supplier selection in palm oil industry. *Processes*, 9(6), 1078.

Kurniawan, I. (2022). *IoT-based palm oil supply chain framework*. International Conference on Engineering and IT.

Lim, C. H., et al. (2020). Biodiesel supply chain optimization. *Sustainability*, 12, 8400.

Lin, R. J., Chen, R. H., & Nguyen, T. H. (2011). Green supply chain management performance. *Procedia Social and Behavioral Sciences*, 25, 233–245.

Mareeh, H. Y. S., et al. (2022). Palm oil supply chain profitability. *Nankai Business Review International*.

Marimin Adhi, W., & Darmawan, M. A. (2017). Balanced scorecard SCM model. *International Journal of Supply Chain Management*, 6, 60–74.

Moher, D., et al. (2009). PRISMA statement. *PLoS Medicine*, 6(7), e1000097.

Mok, A., Yu, H., & Zihayat, M. (2022). Sustainability in supply chains: Triple bottom line analysis. *Journal of Global Fashion Marketing*, 13(4), 360–379.

Muhammad Rizal, Ruslaini Ruslaini, & Eri Kusnanto. (2022). Peran Regulasi dalam Mendorong Adopsi Cloud Computing UMKM DKI Jakarta. *Journal of Business, Finance, and Economics* (JBFE), 3(1), 130–136. https://doi.org/10.32585/jbfe.v3i1.5707

Nashr, F., Putri, E. I. K., Dharmawan, A. H., & Fauzi, A. (2021). Sustainability of smallholders in palm oil supply chains. *International Journal of Sustainable Development & Planning*, 16(4), 771–781.

Nupueng, S., Oosterveer, P., & Mol, A. P. (2022). Governing sustainability in palm oil supply chains. *Sustainability Science*, 18, 37–54.

Putri, E. I. K., et al. (2022). Palm oil governance challenges. *Sustainability*, 14, 1820.

Quarshie, A. M., et al. (2016). CSR in supply chains. *Journal of Purchasing & Supply Management*, 22, 82–97.

Ruslaini Ruslaini, & Eri Kusnanto. (2020). Sustainability Dalam Rantai Pasok Global: Tinjauan Literatur Dari Perspektif Bisnis Internasional dan Manajemen Rantai Pasok. *Journal of Business, Finance, and Economics* (JBFE), 1(2). https://doi.org/10.32585/jbfe.v1i2.5691

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699–1710.

Shahbaz, M., et al. (2013). CO2 emissions in Indonesia. *Renewable and Sustainable Energy Reviews*, 25, 109–121.

Sikdar, S. K. (2003). Sustainable development and sustainability metrics. *AIChE Journal*, 49(8), 1928–1932.

Snashall, G. B., & Poulos, H. M. (2021). Sustainability transformations in palm oil industry. *Forests*, 12(2), 252.

Sun, Y., et al. (2020). Green innovation practices. *Sustainability*, 12, 545.

Suroso, A., et al. (2021). Sustainable decision-making in palm oil. *Decision Science Letters*, 10, 241–246.

Teuteberg, F., & Wittstruck, D. (2010). *A systematic review of sustainable supply chain management*. Multikonferenz Wirtschaftsinformatik.

Thomas, J., & Harden, A. (2008). Methods for thematic synthesis. *BMC Medical Research Methodology*, 8(45).

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge. *British Journal of Management*, 14(3), 207–222.

Tundys, B., & Wiśniewski, T. (2018). Green supply chain performance measurement tools. *Sustainability*, 10(2), 549.

USDA. (2023). *Oilseeds and world market report*. United States Department of Agriculture.

Wan Mahmood, W. H., et al. (2013). Green supply chain performance. *World Applied Sciences Journal*, 21, 76–84.