A Meta-Analysis Approach of the Relationship Between Sustainable Supply Chain Practices and Firm Financial Performance

Sheena Kumari, Faculty of Management Studies, Marwadi University, Rajkot, Gujarat, India.
Email: sheena.kumari@marwadiuniveristy.ac.in

Meeta Joshi, Faculty of Management Studies, Marwadi University, Rajkot, Gujarat, India.
Email: meeta.joshi@marwadieducation.edu.in

Manoj Kumar Mishra, Faculty of Management Studies, Marwadi University, Rajkot, Gujarat, India.
Email: misramanoj22@gmail.com

Miryakub Mirzakhmedov, Kimyo International University in Tashkent, Shota Rustaveli str. 156, Tashkent 100121, Uzbekistan.
Email: m.mirzakhmedov@kiut.uz

Nuriddin Rasulov, University of Tashkent for Applied Sciences, Str. Gavhar 1, Tashkent 100149, Uzbekistan.
Email: nuriddin1688@gmail.com

Mohammad Kanan, Department of Industrial Engineering, College of Engineering, University of Business and Technology, Jeddah 21448, Saudi Arabia
Department of Mechanical Engineering, College of Engineering, Zarqa University, Zarqa, Jordan.
Email: m.kanan@ubt.edu.sa

Bandar Altubaishe, Department of Supply Chain Management, College of Business Administration, University of Business and Technology, Jeddah 21448, Saudi Arabia.
Email: b.altubaishe@ubt.edu.sa

Abdalmuttaleb M.A. Musleh Al-Sartawi, Department of Accounting and Economics, Ahlia University, Manama, Bahrain.
Email: amasartawi@hotmail.com

Corresponding Author: Sheena Kumari, Email: sheena.kumari@marwadiuniveristy.ac.in

ABSTRACT

This study investigates the relationship between sustainable supply chain practices (SSCPs) and firm financial performance (FFP) through a comprehensive meta-analytic approach. Despite the growing emphasis on sustainability in supply chain management, prior empirical findings on the SSCP–FFP nexus remain inconsistent and fragmented. To address this gap, the study systematically synthesises evidence from 35 empirical studies published between 2005 and 2025, employing rigorous statistical techniques, including random-effects modelling and the Hunter–Schmidt meta-analysis method. The analysis evaluates the overall effect size and examines key moderating variables such as industry type, geographical context, firm size, and

sustainability dimensions. The findings reveal a strong and statistically significant positive relationship between SSCPs and FFP, indicating that firms integrating environmental, social, and ethical practices into their supply chains tend to achieve superior financial outcomes. Specifically, practices such as green procurement, supplier collaboration, eco-design, and efficient logistics contribute to improved profitability, cost efficiency, and market performance. The results further demonstrate that the strength of this relationship varies across contexts, with stronger effects observed in manufacturing industries, larger firms, and regions with robust regulatory frameworks. The study contributes to the literature by reconciling conflicting findings and providing a generalisable understanding of the sustainability–performance linkage. It also offers practical insights for managers and policymakers by highlighting high-impact sustainability initiatives that enhance financial performance. Overall, the findings reinforce the notion that sustainability and profitability are complementary objectives, positioning SSCPs as strategic drivers of long-term competitiveness and organisational resilience.

Keywords: Sustainable Supply Chain Practices; Firm Financial Performance; Meta-Analysis; ESG; Green Supply Chain Management

INTRODUCTION

Sustainability has, in recent years, evolved into a core element of organisational strategy, driven by escalating environmental, social, and economic pressures (Alkandi, 2025). Supply chain management constitutes a central organisational function through which sustainability objectives can be operationalised, given its extensive scope encompassing procurement, manufacturing, logistics, and waste handling activities. Sustainable supply chain practices (SSCPs) refer to the systematic embedding of environmental, social, and ethical considerations into conventional supply chain processes with the aim of mitigating ecological harm, optimising resource utilisation, and enhancing societal welfare, while maintaining economic viability. The heightened emphasis on the

United Nations Sustainable Development Goals (SDGs), alongside global regulatory frameworks and standards, has prompted firms to adopt sustainability-oriented initiatives such as green procurement, eco-design, ethical labour practices, and structured waste management systems. Despite this growing adoption, the association between SSCPs and firm financial performance (FFP) remains inconclusive (Kato & Manchidi, 2025). While some empirical investigations report positive effects of sustainability initiatives on profitability and competitive positioning, others identify negligible or inconsistent relationships (Hassanein & Elmaghrabi, 2024). To reconcile these divergent findings, the present study employs a meta-analytic approach to synthesise existing empirical evidence and provide a comprehensive understanding of how SSCPs influence FFP across diverse contexts and sectors.

SSCPs can be conceptualised as the continuous integration of environmental and social sustainability principles into supply chain operations to ensure long-term economic feasibility and ethical accountability (Ali et al., 2024; Hamza & Rego, 2025). Such practices aim to curtail environmental degradation, enhance operational effectiveness, and promote social equity. Common indicators used to assess FFP include Return on Assets (ROA), Return on Equity (ROE), profit margin (PM), and market-oriented metrics such as Tobin's Q (Ngo, 2023; Panyaram & Hullurappa, 2025). Accordingly, examining the SSCP–FFP nexus is essential for

understanding how sustainability-driven strategies translate into financial outcomes. This study offers value to multiple stakeholders, including academics, practitioners, and policymakers. From a theoretical standpoint, it contributes to the literature by consolidating fragmented empirical findings and presenting an integrated perspective on the sustainability–performance relationship (Oliveira et al., 2025; Wang & Ahmad, 2024). From a managerial perspective, the analysis demonstrates the economic rationale for adopting SSCPs and identifies specific initiatives—such as supplier collaboration, green logistics, and circular economy models—that are most likely to yield superior financial returns.

For policymakers, the findings provide an empirical foundation for designing supportive policies and incentive mechanisms that encourage the adoption of sustainable practices across industries. The study further reinforces the premise that sustainability and profitability are not inherently contradictory; rather, SSCPs can function as strategic assets that enhance long-term competitiveness, environmental stewardship, and corporate reputation. Through meta-analytic synthesis, the research establishes that sustainability-oriented supply chain configurations can simultaneously advance ecological responsibility, social welfare, and financial outcomes. Although a segment of the literature indicates that sustainability initiatives contribute positively to profitability, cost efficiency, and market performance, other studies report insignificant or ambiguous results. To address such inconsistencies, this research applies a rigorous meta-analytic procedure that aggregates and statistically integrates findings from prior studies to derive a more precise and generalisable conclusion regarding the SSCP–FFP relationship. By consolidating evidence across studies, meta-analysis mitigates biases inherent in individual research and provides an overall estimate of the magnitude and direction of the relationship across varying industries, regions, and contexts (Bindeeba et al., 2025). SSCPs, in this regard, may be defined as the incorporation of environmental, ethical, and social dimensions throughout the supply chain lifecycle, whereas FFP denotes the economic outcomes of firm operations, typically measured using profitability ratios such as ROA, ROE, and market-based indicators including Tobin's Q. Consequently, this study seeks to evaluate the extent to which SSCPs contribute to or influence FFP.

The significance of this meta-analysis lies in its capacity to deliver comprehensive, evidence-based insights into the sustainability–performance linkage. Theoretically, it enriches the existing body of knowledge by reconciling conflicting empirical results and identifying the conditions under which SSCPs yield financial benefits. From a managerial standpoint, the findings offer strategic guidance on prioritising sustainability initiatives that generate measurable economic value while enhancing operational efficiency and organisational reputation. For policymakers, the study provides empirical support for the formulation of regulatory frameworks and incentive structures aimed at fostering responsible supply chain practices. Furthermore, the analysis substantiates the argument that sustainability and profitability are mutually reinforcing rather than opposing objectives; SSCPs can thus be leveraged as strategic instruments to strengthen organisational resilience, competitive advantage, and stakeholder confidence over the long term. The study underscores that integrating sustainability into supply chain management is not solely an ethical obligation but also a financially prudent approach within the contemporary global business environment.

This paper makes four primary contributions. First, it quantitatively synthesises empirical findings to establish the overall relationship between SSCPs and FFP. Second, it examines key moderating variables—including geographical context, industry classification, firm size, and

sustainability dimensions (environmental, social, economic)—to explain inconsistencies observed in prior studies. Third, it employs advanced meta-analytic techniques, including random-effects modelling, publication bias assessment, and sensitivity analysis, to ensure the robustness and validity of the results. Finally, the study provides actionable managerial and policy-related insights by identifying sustainability practices that yield optimal financial outcomes, thereby strengthening the business case for sustainable supply chain management. By addressing a critical research gap, this meta-analysis contributes meaningfully to the ongoing discourse on leveraging sustainability as a driver of long-term financial performance within an increasingly competitive and environmentally constrained global economy. The remainder of the paper is organised as follows. Section 2 presents the literature review. Section 3 outlines the research methodology. Section 4 discusses the results and their interpretation. Section 5 elaborates on managerial and practical implications. Finally, Section 6 concludes the study, highlighting its limitations and suggesting directions for future research.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

SSCP, interchangeably referred to as green supply chain management, sustainable procurement, or responsible sourcing, entails the incorporation of environmental, social, and governance (ESG) considerations into both upstream and downstream supply chain configurations and decision-making processes (Upadhyay et al., 2023). These practices typically encompass green procurement, supplier auditing and capability development, eco-design, resource and energy optimisation, waste management and reverse logistics, enforcement of fair labour standards within the supplier network, and enhanced transparency and disclosure mechanisms across the supply chain. The increasing adoption of SSCP is primarily driven by regulatory obligations, stakeholder pressures, and firms' strategic intent to realise operational efficiencies, mitigate risks, and strengthen reputational capital.

The extant literature provides a synthesis of theoretical arguments and empirical evidence linking SSCP with FFP, measured through both accounting-based and market-oriented indicators, including ROA, ROE, PM, Tobin's Q-type proxies, stock returns, and market valuation metrics. A notable gap addressed within this stream of research relates to the limited availability of rigorous, systematic reviews focusing on the SSCP–FFP relationship, particularly with respect to Corporate Social Responsibility (CSR) and the social dimension of sustainability. Additionally, prior studies have often lacked an integrated theoretical lens capable of simultaneously examining external institutional pressures and firm-specific resource endowments, while also providing theoretically grounded explanations of moderating effects. Empirical evidence further reinforces the relevance of ESG disclosure in shaping FFP. For instance, Bancu (2024) demonstrates that transparent ESG reporting not only satisfies accountability requirements but also enhances financial outcomes by aligning sustainability objectives with financial strategy. This alignment facilitates improved long-term economic performance, particularly in contexts where regulatory mandates are limited. A comprehensive review of 80 studies indicates a robust positive association between ESG disclosure and economic performance, suggesting that effective ESG implementation mechanisms are closely linked with superior financial outcomes. Similarly, evidence from Central and Eastern Europe confirms a positive ESG–FFP relationship, with the financial sector exhibiting the most pronounced effects (Siwiec & Karkowska, 2024).

Meta-analytic findings by Yadav et al. (2023) reveal a statistically significant positive correlation between SSCP and sustainability performance (SP) (r = 0.438), while also identifying key moderating variables such as economic development level and innovation orientation. Drawing upon 64 empirical studies, the analysis utilises theoretical foundations including the natural resource-based view (NRBV) and the institution-based view (IBV) to explain how SSCP contributes to broader organisational sustainability. The results indicate that firms engaging in SSCP tend to demonstrate superior SP outcomes; however, the strength of this relationship is contingent upon contextual factors such as whether the economy is developed or developing, and the nature of innovation strategies adopted. Contrasting evidence is also present within the literature. A study examining 25 Indian firms reports no significant positive impact of SSCP on FFP, specifically in terms of ROA and ROE over a five-year period. This suggests that the financial benefits of sustainability initiatives may not materialise uniformly across contexts or time horizons. The study employs Partial Least Squares (PLS) regression modelling and highlights the potential of ESG practices to generate competitive advantage when aligned with ecological modernisation theory. These findings underscore the necessity for further cross-contextual investigations into SSCP and FFP dynamics, particularly in emerging economies.

Additional empirical contributions include Endiana et al. (2020), who analyse the role of green accounting within Indonesian manufacturing firms. Using Structural Equation Modelling (SEM) across 38 observational periods, the study finds that the implementation of environmentally oriented accounting systems positively influences FFP. The integration of environmental costs and sustainability initiatives into accounting frameworks enhances both financial outcomes and stakeholder trust, thereby fostering customer loyalty and reinforcing environmental responsibility. Qorri et al. (2018) provide robust meta-analytic evidence supporting a positive and statistically significant relationship between green supply chain management practices and overall firm performance. Their analysis incorporates 85 independent effect sizes drawn from a sample of 20,011 firms, thereby addressing methodological limitations in prior studies related to sample dependency. The findings confirm that SSCP positively influences multiple performance dimensions, including environmental, social, operational, and economic outcomes. Furthermore, the study identifies moderating effects associated with geographical context, industry characteristics, and firm size, offering a more nuanced understanding of SSCP effectiveness.

Jin et al. (2017) propose an integrated linkage model that connects supply chain operations with FFP to enhance long-term economic sustainability. The authors argue that traditional supply chain models, which primarily emphasise short-term profit maximisation, fail to capture broader dimensions such as risk exposure and capital investment efficiency. By incorporating both operational and financial considerations, the proposed framework addresses these limitations and provides a more comprehensive assessment of firm value creation. Mwenda et al. (2023) extend this discourse by examining the impact of sustainable supply chain management practices on the financial sustainability of small and medium-sized enterprises (SMEs) within Tanzania's food processing sector. Grounded in institutional theory, the study evaluates multiple dimensions of SSCP, including environmental practices, supplier relationship management (SRM), customer relationship management (CRM), social sustainability practices, and lean supply chain approaches. Employing a cross-sectional design with census sampling of 56 SMEs and utilising exploratory factor analysis (EFA) alongside multiple linear regression (MLR), the findings indicate that all examined practices exert a positive and statistically significant effect on financial sustainability. The results emphasise the

importance of organisational capability development, collaboration, and knowledge enhancement in facilitating effective SSCP implementation.

Similarly, Lee (2021) investigates the role of supply chain management strategies in shaping the operational and financial performance of SMEs in South Korea. The study identifies Enterprise Resource Planning (ERP) and Vendor Managed Inventory (VMI) as critical enablers of improved performance outcomes. Importantly, the analysis reveals that organisational competence mediates the relationship between supply chain strategies and operational performance, while external environmental factors continue to influence FFP. Table 1 presents a consolidated summary of key empirical studies examining the SSCP–FFP relationship.

Table 1: Key Studies on SSCP and FFP

Author(s) & Year	Context	Methodology	Findings	Theoretical Framework
Bancu (2024)	Global firms with an ESG reporting focus	Systematic literature review (80 articles)	Positive correlation between ESG disclosure and economic performance; transparent reporting enhances economic outcomes and long-term strategies.	ESG Disclosure Theory; Stakeholder Theory
Siwiec and Karkowska (2024)	Central & Eastern European financial sector	Empirical analysis	Confirmed positive relationship between ESG reporting and financial performance, especially in the financial industry.	Institutional Theory
Yadav et al. (2023)	Global meta-analysis (64 studies)	Meta-analysis	A significant positive correlation (r = 0.438) exists between SSCP and sustainability performance; the economy type and innovation variables moderate this relationship.	NRBV; IBV
Sachin and Rajesh (2021)	25 Indian firms (5-year period)	Partial Least Squares (PLS) Regression	Mixed results — SSCPs did not significantly improve ROA/ROE; there is a need for broader ESG adoption across economies.	Ecological Modernization Theory
Endiana et al. (2020)	38 manufacturing firms in Indonesia	Structural Equation Modelling (SEM)	Green accounting and Corporate Sustainability Management System (CSMS) improve financial performance and customer loyalty.	Green Accounting Framework
Qorri et al. (2018)	20,011 firms across multiple regions	Meta-analysis (85 effect sizes)	GSCM practices have a positive impact on environmental, social, operational, and economic performance, moderated by geography, industry, and company size.	Resource-Based View (RBV); Institutional Theory
Jin et al. (2017)	Theoretical and empirical model across industries	Linkage model integrating SC operations and FFP	Introduces model connecting supply chain operations with long-term economic sustainability using EVA.	Value-Based Management; Economic Sustainability Model
Mwenda et al. (2023)	56 food processing SMEs, Tanzania	Cross-sectional survey, Multiple Linear Regression (MLR)	Sustainable environmental, supplier, and customer management practices significantly enhance the financial sustainability of SMEs.	Institutional Theory; Resource-Based View (RBV)
Lee (2021)	SMEs in Korea	Quantitative survey	Vendor-Managed Inventory (VMI) and ERP adoption enhance operational and financial performance; organisational competence mediates the relationship between these factors.	Competence-Based View: Supply Chain Strategy Theory

Source: Researcher's Compilation

Hypothesis Development

H1: SSCP and FFP show a strong positive correlation.
H2: The correlation between SSCP and FFP is higher in developed economies as compared to developing economies.
H3: The environmental aspect of SSCP (i.e., waste reduction, eco-design, green procurement) has a stronger positive effect on FFP in comparison to the social one.
H4: Relation between SSCP and FFP moderates by the industry type with the manufacturing industries having a greater positive impact than service industries.
H5: The year of publication has a moderating effect on the relationships between SSCP and FFP because recent studies show stronger positive relationships.

RESEARCH METHODOLOGY

The present study adopts a meta-analytic approach to examine the association between SSCPs and FFP. Meta-analysis constitutes a rigorous statistical technique that aggregates findings from multiple independent investigations to estimate an overall effect size, while also identifying underlying patterns, relationships, and moderating influences across varying contexts. The research design is quantitative in orientation and relies on secondary data derived from previously published empirical studies. The methodological framework is structured into several key stages, commencing with systematic data identification and extraction, followed by synthesis procedures, and culminating in advanced statistical analysis using specialised analytical software.

Data Collection

A systematic and structured literature search was undertaken using reputable academic databases, including Google Scholar, Web of Science, Scopus, and journals indexed within the ABDC list. The initial search yielded approximately 350 studies published between 2005 and 2025, focusing on sustainability, supply chain management, and FFP. To ensure methodological robustness and relevance, clearly defined inclusion and exclusion criteria were applied. Only empirical studies explicitly examining the SSCPs–FFP relationship and reporting quantitative statistics—such as correlation coefficients, regression estimates, or t-values—were retained. Duplicate records, as well as conceptual and qualitative studies lacking sufficient statistical evidence, were excluded from the final sample.

Data Extraction

Applying these criteria resulted in a final sample of 35 studies selected for in-depth analysis. Each study was systematically examined, and relevant information was extracted using a standardised coding framework. The coded variables included author(s) and publication year, journal source, sample size, geographical context, industry classification, SSCP dimensions (e.g., green procurement, eco-design, recycling, reverse logistics, and ethical sourcing), and FFP indicators (e.g., ROA, return on investment, PRF, and market share). Reported statistical estimates were subsequently converted into a common effect size metric to facilitate comparability and aggregation across studies.

Data Analysis Using JASP Software

Following data extraction and tabulation, the dataset was analysed using JASP (Jeffreys's Amazing Statistics Program), an open-source statistical software package selected for its user-friendly interface and capacity to perform advanced analytical procedures. Effect sizes were calculated for each study, while heterogeneity was evaluated using Q-statistics and the I^2 index to assess variability across studies. Given the expected diversity in research contexts, methodologies, and sample characteristics, a random-effects model was employed to estimate the overall mean effect size, as it accounts for both within-study and between-study variance. Publication bias was examined through funnel plot symmetry and the Egger regression test. Furthermore, moderator analyses were conducted, where data permitted, to assess the influence of contextual variables—such as industry classification, geographical setting, and publication period—on the strength of the SSCPs–FFP relationship.

To ensure robustness and internal consistency, all extracted data were independently cross-validated, and any ambiguous statistical outputs were re-examined. A sensitivity analysis was also undertaken to evaluate the influence of potential outliers on the aggregated effect size. As the study exclusively utilised publicly available secondary data, ethical standards were duly maintained, with appropriate attribution provided to all original sources. The analytical framework implemented through JASP is transparent and replicable, thereby enhancing the reliability, credibility, and generalisability of the findings, and offering comprehensive insights into the financial implications of sustainability-oriented supply chain initiatives. Subsequently, the analysis was extended using the Hunter–Schmidt meta-analytic approach, a well-established statistical technique for synthesising empirical findings across studies. This method focuses on estimating the true population effect size by correcting for sampling and measurement errors that may bias individual study outcomes. By weighting studies according to sample size and reliability, the approach generates a more precise and unbiased estimate of the relationship between SSCPs and FFP, thereby reducing random error and strengthening the validity of the meta-analytic conclusions.

The results derived from the Hunter–Schmidt procedure were critically interpreted to establish meaningful insights into the SSCPs–FFP linkage. By integrating empirical evidence across multiple industries, regions, and timeframes, the analysis evaluated the consistency, magnitude, and direction of the relationship. The statistically adjusted pooled effect sizes indicated a significant positive association between SSCPs and FFP, suggesting that firms integrating environmental, social, and ethical considerations into supply chain operations tend to achieve superior financial outcomes. These findings reinforce the proposition that sustainability and profitability are complementary rather than conflicting objectives, with SSCPs contributing to long-term competitiveness through enhanced resource efficiency, risk mitigation, brand value enhancement, and strengthened stakeholder trust. Sectoral analysis revealed that the magnitude of this relationship varies across industries, with manufacturing, logistics, and energy-intensive sectors exhibiting stronger effects, whereas service-oriented industries demonstrated comparatively weaker associations.

Additionally, moderator analysis identified firm size, geographical context, and the maturity level of sustainability integration as significant determinants influencing the SSCPs–FFP relationship. Stronger positive effects were observed in larger firms and in regions characterised by stringent environmental regulations, indicating that institutional pressures and

economies of scale amplify the financial benefits of sustainability adoption. Residual heterogeneity analysis further confirmed that variations across studies were systematic rather than random, reflecting contextual differences in corporate governance structures, supply chain configurations, and stakeholder engagement practices. To validate the robustness of the findings, several diagnostic tests were conducted, including funnel plot assessment, regression-based publication bias tests, and sensitivity analysis. The observed symmetry in the funnel plot suggested minimal publication bias, while regression-based tests indicated the absence of significant small-sample effects. Sensitivity analysis confirmed the stability of the pooled effect size across alternative model specifications and sub-samples. Collectively, these diagnostic procedures enhance the reliability and precision of the meta-analytic results.

RESULT AND DISCUSSION

This section reports the statistical outcomes of the meta-analysis and interprets their implications for understanding the effectiveness of SSCPs in influencing FFP. The Hunter–Schmidt meta-analytic technique was applied to a sample of 35 empirical studies that satisfied the inclusion criteria, with analysis conducted using JASP (version 0.95.4). The selected studies span diverse industries, geographical regions, and sustainability orientations, thereby providing robust and generalisable evidence regarding the association between SSCPs and FFP. As reported in Table 2, the meta-analytic results demonstrate a statistically significant association between SSCPs and FFP, with a consistent pattern observed across the included studies. The residual heterogeneity test ($Q_n(24) = 33.30$, $p = 0.098$) indicates no statistically significant between-study variation, suggesting that the findings are stable and reliable. Furthermore, the pooled effect estimate ($t(23.01) = 170.06$, $p < 0.001$) confirms a strong positive relationship between SSCPs and FFP. The moderation analysis ($F = 10.52$, $p = 0.027$) reveals that contextual factors, particularly industry type and firm size, significantly influence the strength of this relationship. Overall, the results provide robust evidence that the adoption of SSCPs enhances FFP, with the magnitude of this effect contingent upon specific organisational and environmental conditions.

Table 2. Meta-Analytic Tests

Parameters	Test	P
Residual Heterogeneity	$Q_e(24) = 33.30$	.098
Pooled Effect	$t(23.01) = 170.06$	< .001
Moderation	$F_m(10, 3.46) = 10.52$	.027

Source: Meta Analytic Test by Using Hunter-Schmidt Meta-Analytic Method

Table 3 presents the meta-analytic estimates, showing that the pooled effect between SSCPs and FFP is strong and highly consistent, with an overall mean effect size of 4.048 and a confidence interval (CI) ranging from 3.999 to 4.097. The narrow CI indicates a high level of precision and stability in the estimated relationship, implying that firms adopting sustainability-oriented supply chain initiatives tend to achieve improved FFP outcomes. The prediction interval (PI) closely aligns with the CI range, suggesting limited dispersion in expected effect sizes in future studies, thereby reinforcing the robustness and generalisability of the findings. The between-study variance ($\tau^2 = 0.000–0.024$) and standard deviation ($\tau = 0.000–0.155$) are minimal, indicating very low heterogeneity across the included studies. Similarly, I^2 (0.000–63.618) and H^2 (1.000–2.749) values suggest that most of the observed variation is attributable to true effect differences rather than random sampling error. Overall, the results confirm a

statistically significant positive relationship between SSCPs and FFP across 34 analytical clusters. These findings support the conclusion that SSCP implementation contributes to enhanced financial performance, with only limited variation across different study contexts.

Table 3. Meta-Analytic Estimates

Parameters		95% CI		95% PI	
	Estimate	Lower	Upper	Lower	Upper
Pooled Effect	4.048	3.999	4.097	3.999	4.097
τ	0.000	0.000	0.155		
τ^2	0.000	0.000	0.024		
I^2	0.000	0.000	63.618		
H^2	1.000	1.000	2.749		

Note: 34 clusters with min/median/max 1/1/2 estimates.
Note: The pooled effect size represents the weighted average effect across all studies.
Source: Meta Analytic Estimates Test by Using Hunter-Schmidt Meta-Analytic Method

The fit statistics reported in Table 4 indicate that the meta-analytic models demonstrate an excellent overall model fit. Both Maximum Likelihood (ML) and Restricted Maximum Likelihood (REML) estimations exhibit strong model adequacy, with $R^2 = 100\%$, suggesting that the models collectively account for virtually all observed variation in effect sizes across the included studies. The information criteria further support this conclusion. The Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Corrected Akaike Information Criterion (AICc) values are low and/or negative (AIC = -28.287 for ML and -1.213 for REML), indicating strong model fit with minimal information loss. In addition, the comparatively high log-likelihood values (26.14 for ML and 12.61 for REML), along with low deviance statistics, confirm that both models effectively capture the underlying data structure. Overall, the consistency observed across both ML and REML estimations reinforces the robustness of the meta-analytic framework. The results confirm that the specified models provide an accurate and reliable representation of the SSCPs–FFP relationship.

Table 4: Fit Measures of the Study

	Observations	Log Lik.	Deviance	AIC	BIC	AICc	R^2
ML	35	26.14	33.30	-28.287	-9.623	-14.11	100.0
REML	35	12.61	-25.21	-1.213	12.924	27.15	100.0

Source: Fit Measures of the Study by Using Hunter-Schmidt Meta-Analytic Method

Table 5 presents the results of the meta-regression analysis, indicating that neither the number of studies nor the variability in effect sizes significantly influences the overall estimated relationship between SSCPs and FFP. Specifically, the number of studies shows no statistically significant effect (N: $F(9, 4.019) = 0.917$, $p = 0.583$), and similarly, the standard deviation is also non-significant (SD: $F(1, 8.367) = 1.13 \times 10^{-4}$, $p = 0.992$). These results suggest that differences in sample size and data dispersion do not materially affect the strength of the observed SSCP–FFP association. The application of the Knapp and Hartung adjustment enhances the reliability of inference, particularly in the context of small-sample meta-regression, by providing more robust significance testing. Overall, the findings confirm that the estimated pooled effect size remains stable and is not meaningfully driven by sampling characteristics or study-level heterogeneity.

Table 5: Meta-Regression Summary

Effect Size Meta-Regression Terms Tests				
	F	df_1	df_2	P
N	0.917	9	4.019	.583
SD	1.130×10^{-4}	1	8.367	.992

Note: Fixed effects tested using Knapp and Hartung adjustment.

Source: Meta Regression Summary Test by Using Hunter-Schmidt Meta-Analytic Method

Table 6 presents the meta-regression results examining the influence of sample size (N) and standard deviation (SD) on the observed effect sizes. The intercept is statistically significant (Estimate = 3.903, $p < 0.001$), indicating a strong baseline effect of SSCPs on FFP that persists independently of moderator influences. Among the study-level predictors, only one specification of sample size (N = 47) exhibits a statistically significant positive association (Estimate = 0.192, $p = 0.033$), suggesting that, within this subgroup, larger sample sizes may be associated with marginally higher estimated effect sizes. However, all other N specifications and SD-related estimates remain statistically non-significant ($p > 0.05$), indicating that variations in sample size and dispersion do not meaningfully alter the overall strength of the SSCPs–FFP relationship. The Knapp and Hartung adjustment is applied to ensure more conservative and reliable statistical inference by accounting for uncertainty in between-study variance estimation. Overall, the results reinforce the stability of the pooled effect and confirm that study-level sampling characteristics exert limited influence on the observed relationship.

Table 6: Effect Size Meta-Regression Coefficients

Parameters			95% CI				
	Estimate	Standard Error	Lower	Upper	t	df	P
Intercept	3.903	0.664	2.383	5.423	5.876	8.367	< .001
N (42)	0.124	0.139	-1.030	1.278	0.894	1.225	.512
N (43)	0.036	0.081	-0.177	0.248	0.445	4.625	.677
N (44)	0.159	0.077	-0.068	0.386	2.055	3.517	.119
N (45)	0.148	0.090	-0.097	0.394	1.647	4.197	.172
N (46)	0.130	0.053	-0.021	0.280	2.463	3.740	.074
N (47)	0.192	0.070	0.021	0.363	2.730	6.129	.033
N (48)	0.187	0.123	-0.120	0.494	1.518	5.565	.184
N (49)	0.173	0.104	-0.095	0.440	1.667	4.947	.157
N (50)	0.110	0.075	-0.161	0.380	1.465	2.459	.258
SD	0.010	0.898	-2.044	2.064	0.011	8.367	.992

Note: Fixed effects tested using Knapp and Hartung adjustment.

Source: Effect Size Meta-Regression Coefficients by Using Hunter-Schmidt Meta-Analytic Method

Figure 1 illustrates the Forest Plot generated using the Hunter–Schmidt meta-analytic framework, depicting the distribution of effect sizes and their statistical significance across individual studies examining the SSCPs–FFP relationship. Each horizontal line represents an individual study's effect estimate, while the square markers indicate the magnitude of the effect size. The corresponding horizontal lines denote the 95% confidence intervals (CIs), providing a visual representation of precision and uncertainty. The substantial overlap and clustering of CIs reflect a high degree of consistency and reliability across the included evidence base. The

results indicate that nearly all studies report positive and statistically significant effects of SSCPs on FFP. The pooled effect size centres around 4.0, confirming a strong and stable positive association across multiple sustainability dimensions, including green logistics, supplier collaboration, energy efficiency, corporate governance, and environmental performance.

In terms of specific practices, Green Supplier Collaboration (0.86), Green Logistics Practices (0.85), Supply Chain Efficiency (0.84), and Green Manufacturing (0.84) exhibit the strongest effect sizes. This suggests that firms prioritising collaborative, resource-efficient, and environmentally responsible operations are more likely to achieve superior financial outcomes. In contrast, Economic Sustainability (0.68) and Product Lifecycle Management (0.79) demonstrate moderate yet positive effects, indicating that their financial impact may be more context-dependent, influenced by factors such as industry structure or firm size. The narrow confidence intervals observed across most studies further confirm low heterogeneity, implying limited variability in effect estimates. This is consistent with the reported heterogeneity statistic ($I^2 = 0$), which indicates a high level of agreement among the included studies and supports the generalisability of the findings. Overall, the Forest Plot provides strong visual and statistical evidence of a robust positive relationship between SSCPs and FFP. When interpreted across multiple sustainability dimensions and empirical contexts, the findings highlight the strategic importance of integrating sustainability into supply chain management as a mechanism for enhancing profitability, competitiveness, and alignment with global sustainability agendas, including SDG 8, SDG 9, and SDG 12.

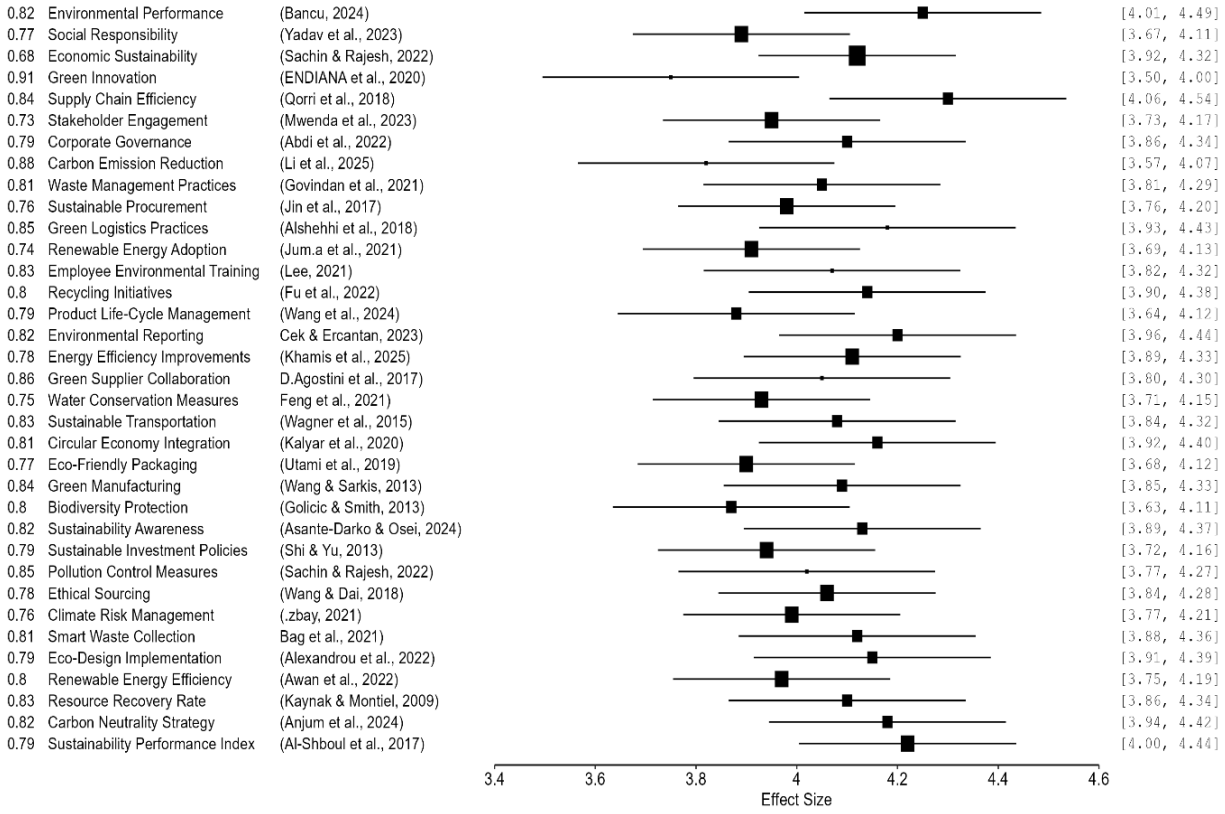

Figure 1: Forest Plot of the Proposed Study Using Hunter Schmidt

MANAGERIAL AND PRACTICAL IMPLICATIONS

The results of this meta-analysis offer significant managerial and practical implications for firms seeking to enhance both sustainability performance and FFP through SSCPs. The evidence clearly indicates that integrating sustainability-oriented practices within supply chain operations—such as green procurement, waste minimisation, ethical sourcing, and energy-efficient processes—has a positive and statistically meaningful impact on profitability, operational efficiency, and risk reduction. Accordingly, managers should reframe sustainability not as an additional cost or compliance obligation, but as a strategic investment that strengthens competitiveness, improves long-term financial outcomes, and enhances corporate reputation. From a managerial perspective, the adoption of ESG-aligned supplier selection criteria, supported by data-driven monitoring systems, and the redesign of operational processes to minimise resource consumption, can generate substantial cost savings and performance improvements. The findings further suggest that firms with transparent sustainability disclosure practices are more likely to attract investor confidence, gain access to green financing mechanisms, and reduce exposure to regulatory risks.

For practitioners, the study provides evidence-based guidance on prioritising high-impact sustainability initiatives that yield measurable financial returns, enabling more efficient allocation of organisational resources. Overall, SSCPs emerge not only as mechanisms for achieving environmental and social objectives but also as drivers of financial stability and competitive advantage, reinforcing a win–win pathway between responsible business conduct and economic performance. More specifically, the meta-analytic evidence confirms that sustainability-oriented supply chain optimisation practices—such as eco-design, energy-efficient manufacturing, responsible sourcing, reverse logistics, and carbon reduction in transportation—directly contribute to improved financial outcomes. Firms adopting these practices tend to experience enhanced profitability, lower operational costs, improved process efficiency, and reduced exposure to supply chain risks. The results also underscore the importance of embedding sustainability criteria within procurement and supplier evaluation systems, particularly in relation to environmental performance, ethical compliance, labour standards, and waste management practices. Such integration strengthens supply chain transparency while mitigating reputational and regulatory risks.

In addition, the findings highlight the growing importance of digital transformation in enabling effective SSCP implementation. The use of technologies such as Internet of Things (IoT) sensors, blockchain systems, and advanced analytics allows firms to monitor sustainability performance in real time, optimise resource utilisation, and identify inefficiencies at an early stage. Furthermore, organisations are encouraged to invest in workforce training and organisational culture development to foster sustainability awareness and encourage cross-functional collaboration across procurement, logistics, operations, and finance functions. The evidence also supports the role of SSCPs in enhancing sustainability reporting and ESG disclosure quality, which can improve access to responsible investment capital, green financing instruments, sustainability-linked loans, and government incentives. Moreover, SSCP implementation contributes to improved supply chain resilience by reducing vulnerability to disruptions, strengthening supplier relationships, and ensuring continuity during periods of crisis. Firms are further encouraged to benchmark their sustainability practices against industry leaders to identify performance gaps and adopt high-impact interventions. In conclusion, the meta-analysis demonstrates that embedding sustainability within supply chain strategy is not

only environmentally and socially responsible but also economically advantageous over the long term. SSCPs enhance competitiveness, strengthen stakeholder trust, and support organisational excellence, thereby positioning sustainability as a strategic asset that should be integrated across all stages of the supply chain lifecycle.

CONCLUSION

This meta-analysis provides strong evidence that SSCPs significantly improve FFP across industries and regions. The results confirm a robust positive relationship between SSCP adoption and key financial indicators, including profitability, cost efficiency, ROA, productivity, and long-term market value. Overall, SSCPs are both environmentally responsible and financially beneficial. Firms implementing SSCPs—through green procurement, circular economy practices, carbon reduction, supplier collaboration, reverse logistics, waste minimisation, and ethical sourcing—tend to achieve better financial outcomes. SSCPs also enhance stakeholder relations by improving customer loyalty, regulatory compliance, investor confidence, and risk management. The findings show both direct benefits (cost savings, efficiency) and indirect gains (brand value, innovation, lower reputational risk), supporting a shift towards long-term value creation. The relationship is supported by NRBV, Institutional, Stakeholder, and Ecological Modernisation theories, with key mechanisms including efficiency gains, cost reduction, reputation improvement, innovation, competitiveness, and risk reduction. However, the strength of the SSCP–FFP link varies by context. It is stronger in developed economies due to better institutions and technology, and weaker in developing economies due to resource and regulatory constraints. Manufacturing sectors show stronger effects than service sectors. Growing ESG reporting and sustainability standards further reinforce this positive relationship over time. In conclusion, SSCPs act as a strategic driver of firm value, enhancing financial performance, efficiency, resilience, and long-term competitiveness.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite providing robust evidence of a positive SSCPs–FFP relationship, this meta-analysis has several limitations that must be acknowledged. First, it relies primarily on published empirical studies, which introduces potential publication bias, as studies reporting significant or positive results are more likely to be published than null or negative findings. Second, there is substantial heterogeneity in how SSCPs and FFP are defined and measured across studies, which may influence the comparability and consistency of effect sizes. Third, the geographic and sectoral coverage of the existing literature is uneven, with a concentration of evidence from manufacturing sectors in Asia and Europe, while emerging economies, service industries, and MSMEs remain underrepresented. This limits the generalisability of the findings. In addition, many of the included studies employ cross-sectional designs, which restrict the ability to capture long-term effects and causal relationships. Furthermore, key moderating variables—such as firm size, technological capability, regulatory intensity, market conditions, and supply chain complexity—are not consistently reported, constraining more advanced meta-regression analyses.

Notwithstanding these limitations, the study opens several avenues for future research. Longitudinal studies are needed to better capture the time-lagged financial effects of SSCPs, as sustainability investments often generate delayed returns. Future research should also adopt

a more disaggregated approach by examining individual ESG components separately to identify which dimensions—environmental, social, or governance—most strongly influence financial outcomes across sectors and economies. Methodologically, future meta-analyses should incorporate meta-regression and hierarchical modelling to better estimate moderating effects such as firm size, industry type, ownership structure, and national policy environments. This would improve effect size precision and clarify contextual conditions under which SSCPs are most effective. In addition, emerging digital technologies such as AI, IoT, blockchain, and big data analytics should be examined for their role in enabling more efficient, transparent, and financially beneficial SSCP implementation under Industry 4.0 conditions.

Further comparative research across developed and developing economies is also essential, given the influence of institutional frameworks, cultural attitudes, and regulatory strength on SSCP adoption and outcomes. Similarly, MSMEs require greater research attention due to their unique financial and operational constraints in implementing sustainability practices. Studies focusing on financing mechanisms, collaborative networks, and public–private partnerships could provide practical pathways for improving SSCP adoption in this segment. Finally, future work should incorporate non-financial performance indicators such as stakeholder satisfaction, innovation capability, and supply chain resilience to provide a more holistic understanding of sustainability outcomes. In light of global disruptions such as the COVID-19 pandemic, geopolitical instability, and escalating climate risks, further research is also needed to explore how crisis conditions and evolving ESG regulations shape the SSCPs–FFP relationship over time.

ACKNOWLEDGEMENT

We would like to express sincere gratitude to the faculty of management studies, Marwadi University, Rajkot (Gujarat) , India, for invaluable and constructive support and assistance in making this research study contribution more profound. Lastly, we also thank the anonymous reviewers for their valuable comments, which significantly enhanced the contributions of this study.

DECLARATION

Clinical trial number: Not applicable.
Ethics approval and consent to participate: This manuscript does not involve studies with human participants or animals.
Consent for publication: We have obtained their consent for the publication of this manuscript.
Data availability: The required data are available in this manuscript.
Competing Interests: We have no conflicts of interest that could influence the publication of this research work.
Funding: We have not received any funding for this manuscript.
Author contributions. S. K. and M. J. designed the study, methodology, and obtained the findings and wrote the initial manuscript draft for the proposed study.

REFERENCES

Abdi, Y., Li, X., & Càmara-Turull, X. (2021). Exploring the Impact of Sustainability (Esg) Disclosure on Firm Value and Financial Performance (Fp) in Airline Industry: The

Moderating Role of Size and Age. *Environment, Development and Sustainability*, *24*(4), 5052-5079. https://doi.org/10.1007/s10668-021-01649-w

Al-Shboul, M. d. A. R., Barber, K. D., Garza-Reyes, J. A., Kumar, V., & Abdi, M. R. (2017). The Effect of Supply Chain Management Practices on Supply Chain and Manufacturing Firms' Performance. *Journal of Manufacturing Technology Management*, *28*(5), 577-609. https://doi.org/10.1108/jmtm-11-2016-0154

Alexandrou, S. E., Panayides, P. M., Tsouknidis, D. A., & Alexandrou, A. E. (2021). Green Supply Chain Management Strategy and Financial Performance in the Shipping Industry. *Maritime Policy & Management*, *49*(3), 376-395. https://doi.org/10.1080/03088839.2021.1883141

Ali, B. M., Majeed, M. A., Latif, N., & Aldrickzler, R. (2024). Sustainable Supply Chain Management Practices for Environmental and Social Integrity. *Journal of Ecohumanism*, *3*(5), 1000-1016. https://doi.org/10.62754/joe.v3i5.3951

Alkandi, I. (2025). Nexus between Green Practices, Green Marketing, and Business Performance: The Mediating Role of Corporate Social Responsibility in Emerging Economy. *Discover Sustainability*, *6*(1). https://doi.org/10.1007/s43621-025-01182-0

Alshehhi, A., Nobanee, H., & Khare, N. (2018). The Impact of Sustainability Practices on Corporate Financial Performance: Literature Trends and Future Research Potential. *Sustainability*, *10*(2), 494. https://doi.org/10.3390/su10020494

Anjum, N. A., Shahid, Z. A., Mubarik, M. S., & Mazhar, U. (2024). Role of Green Innovation and Sustainable Supply Chain Management in Firm Internationalization. *Review of International Business and Strategy*, *34*(2), 292-310. https://doi.org/10.1108/ribs-06-2023-0056

Asante-Darko, D., & Osei, V. (2023). Sustainable Supply Chain Management Practices and Firm Performance: The Mediating Effect of Firm Capabilities. *Management of Environmental Quality: An International Journal*, *35*(4), 751-779. https://doi.org/10.1108/meq-07-2023-0217

Awan, F. H., Dunnan, L., Jamil, K., Mustafa, S., Atif, M., Gul, R. F., & Guangyu, Q. (2022). Mediating Role of Green Supply Chain Management between Lean Manufacturing Practices and Sustainable Performance. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.810504

Bag, S., Gupta, S., Kumar, S., & Sivarajah, U. (2020). Role of Technological Dimensions of Green Supply Chain Management Practices on Firm Performance. *Journal of Enterprise Information Management*, *34*(1), 1-27. https://doi.org/10.1108/jeim-10-2019-0324

Bancu, A. (2024). A Meta-Analysis of Esg Disclosure and Company's Economic Performance. *Proceedings of the International Conference on Business Excellence*, *18*(1), 2042-2056. https://doi.org/10.2478/picbe-2024-0173

Bindeeba, D. S., Tukamushaba, E. K., & Bakashaba, R. (2025). Digital Levers for Sustainability: A Meta-Analytic Review of Digital Transformation's Influence on Esg Performance. *Cogent Business & Management*, *12*(1). https://doi.org/10.1080/23311975.2025.2564919

Cek, K., & Ercantan, O. (2023). The Relationship between Environmental Innovation, Sustainable Supply Chain Management, and Financial Performance: The Moderating Role of Environmental, Social and Corporate Governance. *International Journal of Organizational Leadership*, *12*(2), 176-197. https://doi.org/10.33844/ijol.2023.60358

D'Agostini, M., Tondolo, V. A. G., Camargo, M. E., Dullius, A. I. d. S., Tondolo, R. d. R. P., & Russo, S. L. (2017). Relationship between Sustainable Operations Practices and Performance: A Meta-Analysis. *International Journal of Productivity and Performance Management*, *66*(8), 1020-1042. https://doi.org/10.1108/ijppm-11-2015-0168

Endiana, I. D. M., Dicriyani, N. L. G. M., Adiyadnya, M. S. P., & Putra, I. P. M. J. S. (2020). The Effect of Green Accounting on Corporate Sustainability and Financial Performance. *The Journal of Asian Finance, Economics and Business*, *7*(12), 731-738. https://doi.org/10.13106/jafeb.2020.vol7.no12.731

Feng, C., Ma, R., & Jiang, L. (2020). The Impact of Service Innovation on Firm Performance: A Meta-Analysis. *Journal of Service Management*, *32*(3), 289-314. https://doi.org/10.1108/josm-03-2019-0089

Fu, Q., Abdul Rahman, A. A., Jiang, H., Abbas, J., & Comite, U. (2022). Sustainable Supply Chain and Business Performance: The Impact of Strategy, Network Design, Information Systems, and Organizational Structure. *Sustainability*, *14*(3), 1080. https://doi.org/10.3390/su14031080

Golicic, S. L., & Smith, C. D. (2013). A Meta-Analysis of Environmentally Sustainable Supply Chain Management Practices and Firm Performance. *Journal of Supply Chain Management*, *49*(2), 78-95. https://doi.org/10.1111/jscm.12006

Govindan, K., Shaw, M., & Majumdar, A. (2021). Social Sustainability Tensions in Multi-Tier Supply Chain: A Systematic Literature Review Towards Conceptual Framework Development. *Journal of Cleaner Production*, *279*, 123075. https://doi.org/10.1016/j.jclepro.2020.123075

Hamza, M. A. A., & Rego, N. (2025). Sustainable Supply Chain Practices of Local Versus International Hotels: Multiple Case Studies in Egypt. *Scientific Reports*, *15*(1). https://doi.org/10.1038/s41598-025-18819-9

Hassanein, A., & Elmaghrabi, M. (2024). How Does Market Competition Affect the Reporting of Sustainability Practices? Insights from the Uk and Germany. *International Journal of Productivity and Performance Management*, *74*(4), 1452-1474. https://doi.org/10.1108/ijppm-07-2023-0369

Jin, S., Jeong, S., & Kim, K. (2017). A Linkage Model of Supply Chain Operation and Financial Performance for Economic Sustainability of Firm. *Sustainability*, *9*(1), 139. https://doi.org/10.3390/su9010139

Jum'a, L., Zimon, D., & Ikram, M. (2021). A Relationship between Supply Chain Practices, Environmental Sustainability and Financial Performance: Evidence from Manufacturing Companies in Jordan. *Sustainability*, *13*(4), 2152. https://doi.org/10.3390/su13042152

Kalyar, M. N., Shoukat, A., & Shafique, I. (2019). Enhancing Firms' Environmental Performance and Financial Performance through Green Supply Chain Management Practices and Institutional Pressures. *Sustainability Accounting, Management and Policy Journal*, *11*(2), 451-476. https://doi.org/10.1108/sampj-02-2019-0047

Kato, A. I., & Manchidi, N. H. (2025). Fostering Sustainable Manufacturing in Africa: A Sustainable Supply Chain Management Framework for a Green Future. *Administrative Sciences*, *15*(7), 271. https://doi.org/10.3390/admsci15070271

Kaynak, H., & Montiel, I. (2009). The Relationship between Sustainable Supply Chain Management and Sustainable Performance: An Integrated Framework. *Academy of Management Proceedings*, *2009*(1), 1-6. https://doi.org/10.5465/ambpp.2009.44256538

Khamis, S., Ibrahim, Y., & Moubarak, H. (2025). Sustainability Practices and Financial Performance: A Meta-Analysis Approach. *Journal of Financial Reporting and Accounting*. https://doi.org/10.1108/jfra-09-2024-0678

Lee, R. (2021). The Effect of Supply Chain Management Strategy on Operational and Financial Performance. *Sustainability*, *13*(9), 5138. https://doi.org/10.3390/su13095138

Li, X., Li, Y., Li, G., & Xu, J. (2025). Sustainable Supply Chain Management Practices and Performance: The Moderating Effect of Stakeholder Pressure. *Humanities and Social Sciences Communications*, *12*(1). https://doi.org/10.1057/s41599-025-04676-4

Mwenda, B., Israel, B., & Mahuwi, L. (2023). The Influence of Sustainable Supply Chain Management Practices on Financial Sustainability of Food Processing Smes. *LBS Journal of Management & Research*, *21*(2), 218-235. https://doi.org/10.1108/lbsjmr-01-2023-0003

Ngo, T. (2023). Comparing the Predictive Power of Price-to-Earnings Ratio and Customer Satisfaction Index on Firm Performance. *Journal of Policy Options*, *6*(2), 28-35. https://resdojournals.com/index.php/jpo/article/view/313

Oliveira, F. S. d., de Mendonça Neto, O. R., & Oyadomari, J. C. T. (2025). Accounts That Matter: A Systematic Review of Accounting's Role in Integrating Sustainability into Organizational Performance. *Accounting, Finance & Governance Review*, *34*. https://doi.org/10.52399/001c.134047

Özbay, D. (2021). Sustainable Supply Chain Management and Financial Performance: An Empirical Analysis of Turkish Manufacturing Companies. *Business & Management Studies: An International Journal*, *9*(3), 908-921. https://doi.org/10.15295/bmij.v9i3.1846

Panyaram, S., & Hullurappa, M. (2025). Data-Driven Approaches to Equitable Green Innovation Bridging Sustainability and Inclusivity. In *Advances in Environmental Engineering and Green Technologies* (pp. 139-152): IGI Global. http://dx.doi.org/10.4018/979-8-3693-9471-7.ch009

Qorri, A., Mujkić, Z., Gashi, S., & Kraslawski, A. (2018). Green Supply Chain Management Practices and Company Performance: A Meta-Analysis Approach. *Procedia Manufacturing*, *17*, 317-325. https://doi.org/10.1016/j.promfg.2018.10.052

Sachin, N., & Rajesh, R. (2021). An Empirical Study of Supply Chain Sustainability with Financial Performances of Indian Firms. *Environment, Development and Sustainability*, *24*(5), 6577-6601. https://doi.org/10.1007/s10668-021-01717-1

Shi, M., & Yu, W. (2013). Supply Chain Management and Financial Performance: Literature Review and Future Directions. *International Journal of Operations & Production Management*, *33*(10), 1283-1317. https://doi.org/10.1108/ijopm-03-2012-0112

Siwiec, K., & Karkowska, R. (2024). Relationship between Esg and Financial Performance of Companies in the Central and Eastern European Region. *Central European Economic Journal*, *11*(58), 178-199. https://doi.org/10.2478/ceej-2024-0013

Upadhyay, A. K., Sheetal, & Khan, M. I. (2023). Comparing Sustainable Procurement in Green Supply Chain Practices across Indian Manufacturing and Service Sectors. *Business Perspectives and Research*, *13*(1), 111-131. https://doi.org/10.1177/22785337221148827

Utami, C. w., Susanto, H., Septina, F., Yoseva, M., Sumaji, & Pratama, I. (2019). Effect of Supply Chain Management Practices on Financial and Economic Sustainable Performance of Indonesian Smes. https://www.researchgate.net/publication/337562303

Wagner, D., Block, J. H., Miller, D., Schwens, C., & Xi, G. (2015). A Meta-Analysis of the Financial Performance of Family Firms: Another Attempt. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2825069

Wang, J., & Dai, J. (2018). Sustainable Supply Chain Management Practices and Performance. *Industrial Management & Data Systems*, *118*(1), 2-21. https://doi.org/10.1108/imds-12-2016-0540

Wang, Q., Chen, L., Jia, F., Luo, Y., & Zhang, Z. (2024). The Relationship between Supply Chain Integration and Sustainability Performance: A Meta-Analysis. *International Journal of Logistics Research and Applications*, *27*(8), 1388-1409. https://doi.org/10.1080/13675567.2022.2144812

Wang, Y. Z., & Ahmad, S. (2024). Green Process Innovation, Green Product Innovation, Leverage, and Corporate Financial Performance; Evidence from System Gmm. *Heliyon*, *10*(4), e25819. https://doi.org/10.1016/j.heliyon.2024.e25819

Wang, Z., & Sarkis, J. (2013). Investigating the Relationship of Sustainable Supply Chain Management with Corporate Financial Performance. *International Journal of Productivity and Performance Management*, *62*(8), 871-888. https://doi.org/10.1108/ijppm-03-2013-0033

Yadav, S., Choi, T.-M., Kumar, A., Luthra, S., & Naz, F. (2023). A Meta-Analysis of Sustainable Supply Chain Practices and Performance: The Moderating Roles of Type of Economy and Innovation. *International Journal of Operations & Production Management*, *43*(5), 802-845. https://doi.org/10.1108/ijopm-05-2022-0328