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Artificial Intelligence-Driven Supply Chain Management and Financial Performance in Emerging Economy Firms: The Mediating Role of Sustainable Development

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Abstract

This study examines the impact of AI-driven supply chain management on financial performance in emerging economy firms, with sustainable development acting as a mediating variable. The study explains how AI-enabled supply chain practices contribute to both sustainability and organizational financial outcomes. A quantitative cross-sectional research design was adopted using data collected from 356 supply chain and operations professionals from emerging economy firms. Partial Least Squares Structural Equation Modeling (PLS-SEM) through Smart PLS 4 was employed to test the proposed conceptual framework and mediation relationships. The findings indicate that AI-driven supply chain management positively influences financial performance and sustainable development. Sustainable development practices, including waste reduction, energy efficiency, green logistics, and ESG-oriented operations, partially mediate this relationship. The study concludes that AI integration in supply chain management functions not only as a technological capability but also as a strategic mechanism for enhancing sustainability and financial resilience. Sustainable development plays a significant role in transforming AI-enabled operational improvements into long-term financial benefits. The study contributes to the literature by integrating AI, sustainable development, and financial performance within the context of emerging economy supply chains. The findings provide practical insights for managers and policymakers regarding digital transformation, sustainable supply chain strategies, employee training, ESG alignment, and responsible AI adoption.

Keywords: Artificial Intelligence, Supply Chain Management, Sustainable Development, Emerging Economies, Sustainable Supply Chains Financial Performance.

INTRODUCTION

The creation and deliberate application of Artificial Intelligence have been very disruptive and transformative across most, if not all, facets of integrated supply chain management across the world. Traditionally, most supply chain and logistics operations relied heavily on inefficient, manual, and reactive procedures. While these procedures may have been effective within a stable geography and balance of operations, they have and will continue to struggle with unpredictable demand, supply disruptions, and environmental and geopolitical pressures. Using Artificial Intelligence to manage the supply chain provides the opportunity to fully integrate and optimize functions such as demand forecasting, inventory control, logistics and operations automation, and supply management. Artificial Intelligence supply chain management leverages automated machine learning, robotics, predictive analysis, decision support, optimization algorithms, automation, integrated systems, and other advanced technologies across the full supply chain (Uche Nweje & Moyosore Taiwo, 2025). These systems are able to detect and suggest solutions for disruptions of operation before shortages or delay can happen, shifting these operations from a reactive to predictive and prescriptive approach. This shift is also important for competitive strategy as a modern supply chain has become more than a cost center;

it is a source of competitive advantage and a company's sustainable performance. Sustainability is now at the center of strategic corporate policy across all sectors of the economy. Stakeholders expect companies to improve operational efficiency and energy consumption, reducing carbon impacts and waste, while implementing responsible procurement supply practices and reducing the environmental impacts of logistics. This revolution in business practices no longer enables companies to have sustainability as an optional activity. There is a growing correlation between reputation, compliance, stakeholder trust, access to capital, risk mitigation, and competitiveness over an extended period of time and sustainability. (Muhammad Ardiansyah, 2024). There is a critical relationship between AI-powered supply chains, and organizational financial performance. However, in the context of sustainable development, this relationship remains partially understood. When it comes to the financial bottom line, AI can enhance it in a variety of ways.

AI can enhance supply chain visibility and control, as well as help increase organizational reputation. AI systems can also enhance organizational reputation, help to become compliant and keep financial stability in the long run. AI and sustainability are of growing relevance, and so is the fact that a limited amount of research exists to show that in emerging economies, sustainable development has a mediating role in the relationship between AI based supply chain management and the financial bottom line. Several factors, including environmental sustainability, infrastructure limitations, and cost pressures, make sustainable development challenging in emerging economies. In these cases, the use of AI in managing supply chains can greatly benefit a firm, especially when faced with weak, fragmented, and costly systems. This is of great importance to academics and practitioners alike (Batkhuu, B & Deng, C, 2025).

Limited research exists on the mediating role of sustainable development in the relationship between AI-driven supply chain management and financial performance in emerging economies.

Figure 1.
AI-driven supply chain value-creation process linking AI capabilities, sustainability, and financial performance

There is a growing interest in the use of Artificial Intelligence (AI) in Supply Chain (SC) management to enhance process efficiency and financial performance. While some companies view cost reduction and automation as primary benefits, others emphasize AI's potential to improve resource management, sustainability, stakeholder trust, environmental stewardship, and ESG governance (Alkaraan et al., 2026). Existing research has addressed AI in SC management, sustainable supply chains, and financial performance separately. However, limited studies examine

sustainable development as a mediator linking AI-enabled SC management to financial performance, especially in resource-constrained emerging economies. The aim of this study is to explore the impact of AI use on financial outcomes and determine if sustainable development partially mediates the relationship. A mediation approach will allow for investigation beyond impact by explaining how AI creates organizational value. If sustainable development is a key mediator, then adopting AI should be considered a tool for sustainable development, not just a technological advancement.

- To examine the impact of AI-driven supply chain management on financial performance in emerging economy firms.
- To investigate the impact of AI-driven supply chain management on sustainable development practices.
- To analyze the impact of sustainable development on financial performance.
- To examine the mediating role of sustainable development between AI-driven supply chain management and financial performance.

HYPOTHESIS

H1: AI-driven supply chain management has a significant positive impact on financial performance in emerging economy firms.

H2: AI-driven supply chain management has a significant positive impact on sustainable development practices.

H3: Sustainable development has a significant positive impact on financial performance.

H4: Sustainable development significantly mediates the relationship between AI-driven supply chain management and financial performance.

SIGNIFICANCE OF THE STUDY

This study enhances the understanding of the relationship between AI and sustainable development by combining the two fields in a mediation model, as well as between AI and financial performance. It demonstrates how AI-driven supply chain management can generate financial value via sustainability initiatives. The study offers real-world insights for managers, advising them on how to incorporate AI into their systems to improve efficiency and to help meet environmental and ESG goals. With sustainable development as a mediator, AI investments can be evaluated based on both financial and sustainability criteria. These learnings can support policy makers in developing economies in their quest to encourage digital transformation, sustainable supply chain management and regulatory policy that will improve competitiveness.

LITERATURE REVIEW

AI-Driven Supply Chain Management

AI has revolutionized supply chain management with its capabilities of predictive and prescriptive decision-making (Odumbo, O. R & Nimma, S. Z, 2025; Uche Nweje & Moyosore Taiwo, 2025). It enhances demand forecasting, inventory management, logistics optimization and supplier coordination. The benefits of AI include improved operational efficiency, cost reduction, and productivity, but these advantages can only be realized through the careful implementation of AI, which requires high-quality

data, seamless integration with current systems, employee training, and management support (Chinnaraju, 2025; Kovanen, A, 2024). Outcomes may be impacted by barriers, e.g., high technology costs, resistance to change. Although prior studies highlight the operational benefits of AI adoption, some researchers argue that implementation barriers such as poor data quality, infrastructure limitations, cybersecurity concerns, and high implementation costs may reduce the effectiveness of AI systems in emerging economies. The key AI capabilities and expected contribution to operations are summarized in Table 1.

Table 1.
AI-driven supply chain capabilities, practical applications, and expected operational benefits

AI capability	Supply chain application	Expected Operational Contribution
Predictive analytics	Demand forecasting and inventory planning	Reduces uncertainty, overstocking, and stock outs
Optimization algorithms	Routing, capacity planning, and production scheduling	Improves cost efficiency and resource utilization
Supplier analytics	Supplier monitoring, risk scoring, and procurement support	Improves visibility and reduces disruption risk
Warehouse intelligence	Picking, storage allocation, robotics, and labor planning	Improves speed, accuracy, and productivity
Decision-support systems	Scenario analysis and exception management	Improves managerial response to disruptions

Sustainable Development in Supply Chain Management

Sustainable development involves balancing economic development, environmental protection, and social responsibility (Alamandi, 2025; Kulkov et al., 2024). In supply chains, sustainability minimizes waste, energy use and emissions, as well as ethical sourcing and ESG compliance. AI plays a role by helping to optimize the use of resources, increase transparency, and assist in carbon accounting. To make sustainability work, there is a need to weigh short term costs with long term benefits, reputation, trust and resilience by operations (Khan et al., 2021; Rane et al., 2024). Sustainable supply chain practices enhance the organizational long-term resilience, but there are some companies in emerging economies who might have a challenge to balance sustainability investments with short-term financial pressures.

Financial Performance

The financial performance is an indicator of a firm's profitability that indicates how well the firm is able to create profit, reduce expenses, and enhance competitiveness (Baah et al., 2020). AI optimises the supply chain, resulting in better forecasting, less wasted effort, and better decision-making, all of which will help to boost profitability, ROI and financial stability. While the short-term effects can differ, the long-term financial implications of AI integration are clear (Nwangwu, J. C, 2025).

Sustainable Development and Financial Performance

The positive impacts of sustainable development on financial performance can be achieved through cost reduction, energy efficiency, green logistics, and responsible sourcing (Kulkov et al., 2024; Ratanacharoenchai & Jantapoon, 2026). It can have costs in the short term, but in the long term, it can lead to better reputation, compliance with regulations, and trust from stakeholders. Sustainability is important in emerging economies to be able to meet the international standard for supply chains, and to be more competitive (Chigbu & Makapela, 2025). Although sustainability offers

long term financial benefits, there may be short term financial cost associated with sustainability implementation in some organizations.

Mediating Role of Sustainable Development

The relationship between sustainable development and financial performance is strengthened by AI-driven supply chain management (Baah et al., 2020; Rane et al., 2024). Waste reduction, energy efficiency, green logistics and ESG practices driven by AI benefit the bottom line by reducing costs, ensuring compliance and enhancing corporate reputation. In this way, sustainability becomes a leveraging tool to turn AI powers into tangible financial results.

Table 2.
Research gaps in prior AI-driven supply chain management studies & the contribution of the present study

Study	Focus	Limitation
(Toorajipour et al., 2021)	AI in supply chain management	Limited focus on sustainability mediation mechanisms
(Culot et al., 2024)	AI in SCM empirical review	Limited attention to emerging economy contexts
(McKinsey & Company, 2024)	AI in distribution operations	Practitioner-based evidence, limited academic rigor
(Deloitte, 2025)	Sustainability in business value	Broad conceptual insights, not SCM-specific empirical testing
Present Study	AI-SCM → Sustainable Development → Financial Performance	Examines sustainability as a mediating mechanism in emerging economy firms.

As mentioned in the above review, although there are several studies that have studied the relationships between artificial intelligence (AI), supply chains, management, and sustainability, there are not many studies that have researched the relationship between AI and sustainable development through supply chain management and financial performance, especially in emerging economies. This study attempts to fill this gap by combining the three variables in a single mediation structure and testing relationships using a structured quantitative method.

THEORETICAL FOUNDATION

Resource-Based View

According to the Resource-Based View framework, firms successfully achieve a competitive advantage when they hold valuable, rare, inimitable, and non-substitutable resources. AI-driven supply chain management is conceptualized as a strategic organizational resource. AI Systems, Predictive Analytics, Supplier Intelligence, and Decision Support - along with Automation, improve the firm's operational efficiency and decision-making (Kovanen, A, 2024). combined with data, employee expertise, managers' routine, and redesigned business processes, AI-SCM can become a resource that is difficult to imitate and can improve forecasting, reduce costs, and enhance service quality and resilience. RBV asserts that AI-driven supply chain management can positively influence financial performance.

Dynamic Capability Theory

Dynamic Capability Theory explains a firm's ability to respond to changing business needs by building, integrating, and reconfiguring resources. AI's impact on the supply chain underscores its significance in achieving balance between economic, environmental, and social returns for sustainable development. Green logistics

improvements, waste reduction, energy efficiency, and safer operations all help achieve ESG goals, among others (Aljohani, 2025). This theory highlights the role of sustainable development in the relationship between AI-driven SCM and sustainability goals.

Triple Bottom Line Theory

The Triple Bottom Line Theory focuses on the need to take into account three important aspects for success: profit, people, and planet. AI's role in supply chain management highlights its importance in balancing economic, environmental, and social outcomes for sustainable development. Practices such as green logistics, waste reduction, energy efficiency, safer operations, and improved supplier transparency contribute to ESG goals (Aljohani, 2025). This theory underscores how sustainable development mediates the relationship between AI-driven SCM and sustainability objectives.

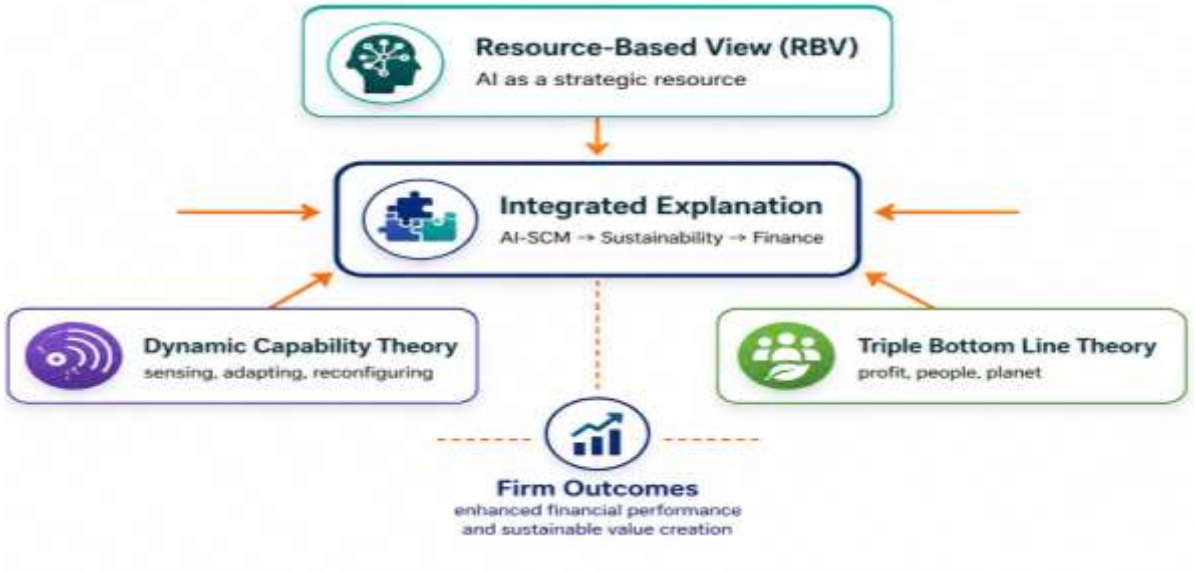

Figure 2.
Theoretical Foundation

CONCEPTUAL FRAMEWORK

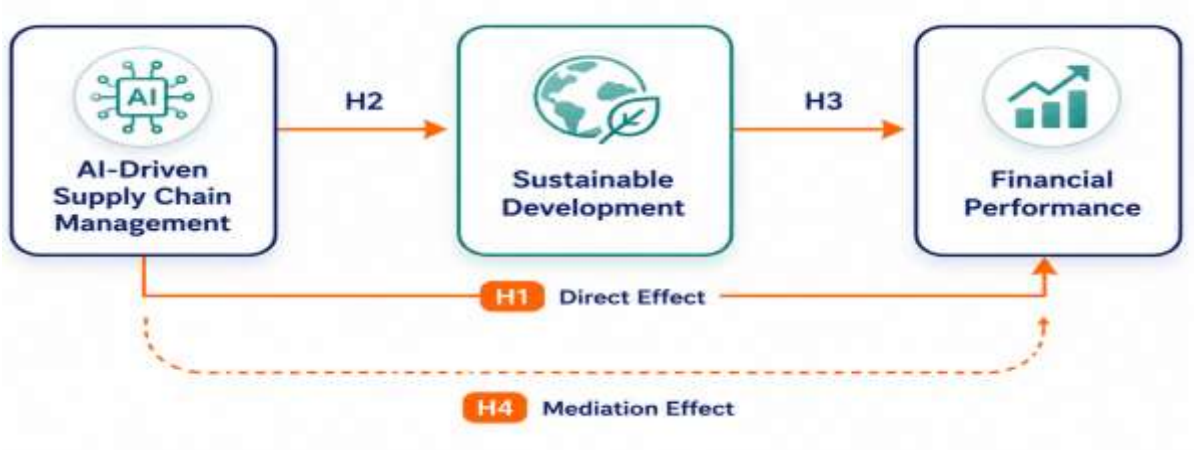

Figure 3.
Conceptual Framework

HYPOTHESES DEVELOPMENT

H1: AI-Driven Supply Chain Management and Financial Performance

Using AI in supply chain management enhances operational efficiency, forecasting accuracy, and decision-making, all of which have a positive impact on organization's performance.

H2: AI-Driven Supply Chain Management and Sustainable Development

AI-driven supply chain management enhances sustainability through improved resource utilization, waste reduction, and environmentally responsible operations.

H3: Sustainable Development and Financial Performance

Implementing Sustainable development practices helps optimize operations, enhance corporate reputation and long-term competitiveness, for better financial performance.

H4: Mediating Role of Sustainable Development

AI's influence on supply chain management can be augmented by Sustainable development to further reinforce the positive impact on financial performance, through the improvement of operational sustainability and ESG performance.

RESEARCH METHODOLOGY

Research Design

This study used a quantitative, cross-sectional, research design to examine the relationships among AI-based supply chain management (independent variable), sustainable development (mediating variable), and financial performance (dependent variable) in firms from emerging economies. Mediation analysis was conducted to assess the role of sustainable development. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed due to the presence of latent variables and mediation relationships.

Research Approach

A deductive approach was used, as hypotheses were developed based on existing theories and literature. This approach allowed testing the conceptual framework and the mediation model with primary data.

Population and Respondents

The population consisted of professionals from supply chain positions in developing economies, including supply chain managers, AI system specialists, logistics workers, warehouse staff, and operators and finance professionals who are well-versed in sustainability efforts.

Sampling Technique

Purposive and convenience sampling was used. The subjects obtained were from participants who were accessible and had experience in the relevant area. Limitations of non-probability sampling are acknowledged.

Sample Size

A total of 356 valid responses were received, meeting the suggested minimum sample size for PLS-SEM analysis. The sample size was determined to be adequate because it

met the requirements for PLS-SEM in relation to the complexity of the model, number of indicators, and the desired statistical power.

Data Collection Method

Primary data will be gathered using a standard set of questionnaires that will be sent out online (Google Forms, LinkedIn, email) and distributed through professional workplace connections. Participation was voluntary will be kept confidential. The questionnaire consists of consent, demographic questions and AI-SCM, SD and financial performance.

Measurement Scale

All constructs will be measured using a 5-point Likert scale ranging from (1 = strongly disagree, 5 = strongly agree).

Ethical Considerations

The study is conducted with the informed consent, confidentiality, and secure management of data. The participation is voluntary and personal identification information will only be collected where it is necessary. All results will be reported with validated data, with a difference between real data and template data.

Control Variables

The study accounted for firm size, firm age, industry type, AI adoption, and experience with the respondent in order to enhance the model. These controls help to explain variations in resources, process maturity, and expertise that can affect the linkages between the use of AI in supply chain management, sustainable development, and financial performance (Stephany et al., 2026).

Data Analysis Strategy

The analysis of the study will be carried out using Partial Least Squares Structural Equation Modeling (PLS-SEM) through SmartPLS 4. The assessment will be based on two models: measurement model and structural model. Responses will be checked for missing data, outliers and inconsistencies.

This measurement model was evaluated using indicator reliability (outer loadings), internal consistency (Cronbach's alpha, Composite reliability), convergent validity (AVE), and discriminant validity (Fornell-Larcker criterion, HTMT). Path coefficients, t-values, p-values, R^2, an effect size f^2 and predictive relevance (Q^2) will be evaluated in the structural model. Mediation will be tested using 5,000 subsamples.

RESULTS

Respondent Profile

A total of 400 questionnaires were sent to emerging economy firms across the supply chain, logistics, procurement, warehouse, manufacturing, operations and finance functions. Having excluded incomplete and careless questionnaires, 356 completed questionnaires were used in the final analysis, giving an effective response rate of 89.0%. The respondent profile shows that the sample included professionals from different functional areas and sectors. Most respondents were male, between 31–40 years of age, and held at least a bachelor's degree. The largest sector represented in the sample was manufacturing, followed by logistics and retail.

Table 3.
Respondent Demographic Characteristics

Demographic Variable	Category	Frequency	Percentage
Gender	Male	214	60.1%
	Female	132	37.1%
	Prefer not to say	10	2.8%
Age	20–30 years	139	39.0%
	31–40 years	151	42.4%
	Above 40 years	66	18.5%
Education	Bachelor	181	50.8%
	Master	132	37.1%
	Other	43	12.1%
Sector	Manufacturing	126	35.4%
	Logistics	87	24.4%
	Retail	74	20.8%
	Other	69	19.4%

Descriptive Statistics

The descriptive statistics revealed that participants positively perceived AI-enabled supply chain management. The mean values for all constructs exceeded the midpoints of the five-point Likert scale. Thus, participants agreed with the statements for study variables.

Table 4.
Descriptive Statistics of Study Constructs

Construct	Mean	Standard Deviation	Minimum	Maximum
AI-Driven Supply Chain Management	3.91	0.62	1.84	5.00
Sustainable Development	3.82	0.67	1.75	5.00
Financial Performance	3.88	0.65	1.67	5.00

AI-driven supply chain management received the highest mean value, indicating that research participants viewed the application of AI as a way to enhance forecasting and inventory control and improve efficiency in logistics and supplier management and in real-time decisions (Uche Nweje & Moyosore Taiwo, 2025). The positive mean score for sustainable development indicates that AI contribute to waste reduction, energy efficiency, and support green logistics and ESG.

MEASUREMENT MODEL RESULTS

Table 5 lists outer loadings, Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) as criteria for assessing the measurement model. The 356 usable responses were adequate for PLS-SEM because the model included latent variables, multiple indicators, and a mediation structure. The results show that all constructs have adequate reliability and convergent validity, with Cronbach's alpha and Composite Reliability above 0.70 and AVE above 0.50.

Table 5.
Measurement Model Assessment Results

Construct	AISCM	SD	FP
AISCM	0.794	0.640	0.583
SD	0.640	0.768	0.681
FP	0.583	0.681	0.781

Note: Diagonal values represent the square root of AVE; off-diagonal values represent inter-construct correlations.

The Heterotrait- **Heterotrait-Monotrait Ratio (HTMT)**

Monotrait Ratio (HTMT) was also used to assess discriminant validity. All HTMT values were below the recommended threshold of 0.90, confirming adequate discriminant validity among the constructs in Table 5.

Table 5.
HTMT Ratio Assessment

Constructs	AISCM	SD	FP
AISCM	—	0.74	0.69
SD	0.74	—	0.78
FP	0.69	0.78	—

Structural Model Results

An assessment was performed on the variables comprising the structural model, which included an examination of the path coefficients statistics, the t and p-values, and the findings of the hypothesis tests. The results indicate that all direct hypotheses supported in Table 6

Table 6.
Structural Model Results

Hypothesis	Relationship	Beta	t-value	p-value	Decision
H1	AISCM → FP	0.28	4.92	0.000	Supported
H2	AISCM → SD	0.64	13.21	0.000	Supported
H3	SD → FP	0.43	8.27	0.000	Supported

The model accounted for 41.0% of the variation in sustainable development and 56.0% of the variation in financial performance, showing moderate explanatory strength.

Mediation Analysis

The authors conducted a mediation analysis using bootstrapping with 5,000 resamples to test sustainable development as a mediator. The authors found a positive and significant indirect effect of AI-driven supply chain management on financial performance through sustainable development.

Table 7.
Mediation Analysis Results

Hypothesis	Indirect Relationship	Indirect Effect	t-value	p-value	Mediation Type
H4	AISCM → SD → FP	0.28	7.64	0.000	Partial Mediation

SUMMARY OF HYPOTHESES

Table 8.
Summary of Hypothesis

Research Objective	Research Question	Hypothesis	Result
O1: To examine the impact of AI-driven supply chain management on financial performance in emerging economy firms.	RQ1: Does AI-driven supply chain management significantly affect financial performance in emerging economy firms?	H1: AI-driven supply chain management has a positive and significant impact on financial performance.	Supported
O2: To investigate the impact of AI-driven supply chain management on	RQ2: Does AI-driven supply chain management significantly influence	H2: AI-driven supply chain management has a positive and significant impact on	Supported

sustainable development practices.	sustainable development practices?	sustainable development.	
O3: To analyze the impact of sustainable development on financial performance.	RQ3: Does sustainable development significantly affect financial performance?	H3: Sustainable development has a positive and significant impact on financial performance.	Supported
O4: To examine the mediating role of sustainable development between AI-driven supply chain management and financial performance.	RQ4: Does sustainable development mediate the relationship between AI-driven supply chain management and financial performance?	H4: Sustainable development mediates the relationship between AI-driven supply chain management and financial performance.	Supported

DISCUSSIONS

The results support the Resource-Based View, Dynamic Capabilities Theory, and Triple Bottom Line theories as it substantiates that technological capabilities positively contribute to organization's performance and sustainability. AI-based SCM is found to be relevant to the other research, such as in enhancing the forecasting, logistics, operational efficiency, and decision-making quality, which boosts SCM and financial performance ((Fosso Wamba et al., 2022; Ivanov & Dolgui, 2020). The mediation results are the main finding of this study. The results suggest that AI in supply chain management can help achieve sustainable development in several ways, such as optimizing resource use, minimizing waste, improving energy efficiency, and promoting green logistics. With AI-powered systems, companies can gain better visibility and real-time monitoring, leading to more efficient transport, inventory, and procurement processes and reducing environmental footprint. The mediation results indicate that sustainable development is a key mechanism through which AI-driven supply chain management improves financial performance. Companies implementing sustainable business practices could achieve lower operating costs, greater stakeholder confidence, better ESG performance, and better long-term competitiveness. The results are in line with previous studies which pointed to the importance of sustainability in the practice of supply chains. The outcomes are important for the emerging economies because they lack in infrastructure, resources and have lower efficiencies in their operations. With limited budgets and resources, organisations can overcome these challenges by making informed decisions, coordinating operations effectively and optimizing sustainability performance, using AI tools. The results indicate that AI applications in supply chain management have an impact on financial results both directly and indirectly via sustainable development.

RECOMMENDATIONS

Managerial Recommendations

Educate employees on the appropriate use of AI-based supply chain systems and digital technologies, ensuring alignment with sustainable development goals (SDGs) and ESG frameworks. Integrate AI with sustainable practices to enhance operational efficiency, reduce waste, improve energy use, and support green logistics, as indicated by the study's findings. Understand the net effect of financial and environmental, social and governance KPIs to measure profitability and sustainability.

Strengthen data quality, data governance and data cross-functionality for successful AI implementation and improved decision making, covering infrastructure and skill needs identified in the discussion.

POLICY RECOMMENDATIONS

- Support the development of digital infrastructure for companies in emerging economies, addressing challenges in resources and skills identified in the discussion.
- Provide incentives for AI adoption, innovation, and employee training to improve operational efficiency and sustainable supply chain management.
- Establish clear guidelines on sustainability and ESG in supply chain operations, promoting environmental efficiency and compliance.
- Advocate for AI governance, ethical use of data, and responsible technology adoption to mitigate risks and enhance transparency.
- Foster partnerships between academia and industry to build capacity, share best practices, and encourage research on AI-driven sustainable supply chains.

THEORETICAL IMPLICATIONS

The present study is based on the premise of the Resource-based View and regards AI-based supply chain management systems as a strategic resource that has the potential to boost financial efficiency when combined with organizational processes. It builds on Dynamic Capability Theory by emphasizing the ability of AI to sense and react to shifts in demand, supply, and operational dynamics particularly in uncertain environments. The research also incorporates the Triple Bottom Line Theory, highlighting how AI can impact the economic, environmental and social aspects of supply chains, combining the three Ps: people, profit and planet.

PRACTICAL AND POLICY IMPLICATIONS

Practical Implications for Managers

- Adopt AI tools to improve forecast accuracy, inventory handling, logistics, supplier management, and warehouse operations.
- Integrate AI with sustainability initiatives to minimize waste, maximize energy efficiency, optimize transportation, and improve ESG reporting.
- Train employees to use AI and supply chain technologies effectively and ensure alignment with SDGs and ESG frameworks.
- Evaluate the combined impact of financial and ESG KPIs on organizational performance.
- Strengthen data governance, cross-functional integration, and cybersecurity for effective AI adoption.

POLICY IMPLICATIONS

- Promote the development of digital infrastructure and the use of AI in emerging economies.
- Encourage innovation, training and sustainable supply chain.
- Set parameters for sustainability and ESG criteria in suppliers.
- Encourage responsible AI regulation and data management.
- Promote collaboration between industry and academia to develop capacity and share good practice.

LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. Firstly, the cross-sectional design restricts the ability to establish causal relationships between the variables. Second, the study relied on self-reported data which may have resulted in response bias. Third, the findings are limited to generalizing because of the use of purposive and convenience sampling. Also, the study was conducted on emerging economy companies, so the results of the study might not be directly applicable in the developed economies. Future studies need to use longitudinal designs, probability sampling methods, and cross-country comparisons to further validate the proposed framework.

CONCLUSION

AI contributes to better supply chain management (SCM) and corporate financial results. The use of AI in the context of sustainable development improves operational efficiency, cuts down on waste and emissions, and bolsters ESG compliance. The research builds on the theories of Resource Based View, Dynamic Capabilities, and Triple Bottom Line, highlighting that AI-assisted SCM can provide a competitive advantage without compromising financial and sustainability goals. In addition, the mediation results confirm that sustainable development is one of the significant mechanisms by which the financial performance of supply chain management through artificial intelligence is enhanced. The study also helps to understand the phenomenon of digital transformation and sustainability integration in resource-constrained firms in emerging economies.

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