

## The Catalytic Role of Artificial Intelligence in Enabling Corporate Sustainable Development: A Systematic Review

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**Abstract:** The rapid advancement of digital economic forces, especially Artificial Intelligence(AI) technologies, is driving structural changes in modern business ecosystems, making the AI-sustainability connection a key research area in management science and technological economics. This study uses the SALSAFS method to conduct a systematic literature review, aiming to clarify how AI applications influence corporate decision-making, performance development, resource allocation, and structural innovation. The research focuses on databases like Scopus, EBSCO, and Science Direct, retrieving articles published between 2020 and 2025. After strict screening, 32 articles were included, categorized into four themes: Human Resource Management, Performance Development, Business Transformation, and ESG. The findings show that AI adoption impacts ESG performance by influencing these aspects, driving corporate sustainable development. This study not only constructs a conceptual framework for AI-driven corporate sustainability but also points out future research directions, advocating a shift from an instrumentalist to a constructivist approach in AI applications. The research has both theoretical and practical implications, while acknowledging limitations such as potential literature inclusion biases.

**Keywords:** Artificial intelligence; Enterprise sustainability; SALSAFS Method; Sustainability performance; Systematic review

### I. Introduction

The disruptive advancement of digital economic forces, particularly Artificial Intelligence (AI) technologies, is catalysing structural metamorphosis within modern business ecosystems. This techno-economic paradigm shift has elevated the AI-sustainability nexus to a critical research frontier in management science and technological economics, demanding rigorous scholarly interrogation. Contemporary enterprises pursuing sustainable transformation confront dual imperatives: Primarily, they must architect dynamic equilibrium mechanisms that reconcile inter-firm

economic competition with multi-stakeholder environmental, social, and governance (ESG) obligations. Crucially, this necessitates deploying intelligent resource orchestration frameworks that synchronize tangible operational assets (e.g., supply chain infrastructure) with intangible strategic capital (e.g., data ecosystems, algorithmic intelligence).

As a pivotal driver in the digital economy, AI technology demonstrates unique advantages through its capacity for seamless resource integration, adaptive optimization capabilities, and real-time problem-solving. These features enable AI to deliver customized solutions aligned

with user needs, mediate internal organizational conflicts, enhance operational efficiency, and improve resource utilization—critical mechanisms for advancing corporate sustainability.

To systematically investigate AI's impact on sustainable business practices, this study employs the SALSAFS method to conduct a comprehensive literature review. The analysis focuses on elucidating how AI applications influence corporate

decision-making, performance development, resource allocation, and structural innovation. This methodological approach aims to strengthen enterprises' long-term competitiveness while establishing an integrated theoretical framework for understanding AI-driven sustainability transitions.

The research was conducted through the following methodological approaches:

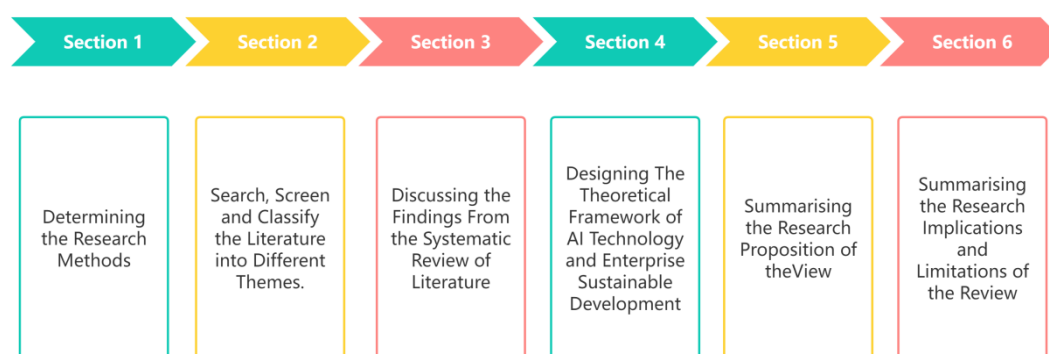


Figure 1 Research program

## II. Materials and Methods

This study extends the traditional SALSA framework (Search, Appraisal, Synthesis, Analysis) for systematic literature reviews by incorporating framework construction and solution summarization, which we formally define as the SALSAFS method (Search, Appraisal, Synthesis,

Analysis, Frame, Summarize).

During the literature retrieval process, we strictly adhered to the PICOS framework (Population, Intervention, Comparison, Outcome, Study design) to ensure methodological rigor. The operational implementation of each component is systematically outlined in the following table.

Table 1 PICOS framework

|              | Definition                          | Standard                                                                      |
|--------------|-------------------------------------|-------------------------------------------------------------------------------|
| Population   | Who or what is the object of study? | Enterprise/Firm/Company                                                       |
| Intervention | What method was adopted?            | Measure the implementation effect of Artificial Intelligence                  |
| Comparison   | What is the alternative?            | The enterprise has adopted Artificial Intelligence                            |
| Outcome      | What are the outcome measures?      | The output effect after the application of artificial intelligence technology |
| Study Design | What are the types of research?     | Empirical articles                                                            |

### A. Literature Search Criteria

This study conducted preliminary searches in Scopus, EBSCO, and Science Direct, selected for their comprehensive coverage of academic literature, which effectively supports the research theme. The application trends of AI technology in

corporate sustainable development were identified by analyzing the types of articles retrieved and the frequency of related phrases, supplemented by backward reference tracking of the cited literature. Based on this, the search strategy combined "subject terms" and "free terms" into

specific search strings. To ensure the breadth of coverage and thematic relevance of the articles included in the text pool, the search strings imposed constraints on both "subject terms" and "free terms" during the retrieval process. The search strings implemented in this research comprised the following components: Artificial intelligence OR Intelligent Automation OR Chatbot OR Automated Intelligence AND Enterprise Sustainability OR Enterprise Development OR Enterprise Green Development.

In addition to the searches conducted in the aforementioned databases, the research team performed supplementary searches on other journal platforms and databases (e.g., MDPI, Science Direct) using the same set of search strings. Articles that could not be downloaded or were not listed in recognized journal databases were excluded. Those meeting the research focus after preliminary screening were incorporated into the text pool.

Articles incorporated into the text pool strictly adhered to the following criteria: (1) Research domain within management, business, or economics; (2) Focus on corporate sustainable development or green transformation; (3) Presence of designated subject terms and free terms in the title, abstract, or keywords; (4) Research theme addressing AI technology applications in corporate development; (5) Study type classified as empirical research; (6) Peer-reviewed articles published exclusively in English; (7) Publication date within the past five years (January 1, 2020 – May 9, 2025).

The search period spanned from January 1, 2020, to May 9, 2025, ensuring temporal relevance to evolving AI-sustainability research paradigms.

## B. Articles Screening

In ScienceDirect, the advanced search function was employed using the terms (AI AND Enterprise Sustainability) within the (Title/Abstract/Keywords) fields, yielding 73 articles published between 2020–2025. For the MDPI database, targeted searches focused on the Sustainability journal, where application of the research team's predefined search strings identified 270 candidate articles.

The articles initially collected into the text pool were imported into EndNote software for secondary machine screening. Duplicate entries were removed, resulting in 6,325 articles (initial sample). After obtaining deduplicated text metadata, a structured text database was created to facilitate systematic review of article titles and abstracts. The research team conducted manual coding in subgroups, independently filtering out articles inconsistent with the research theme. Following a combined machine algorithm and manual screening process, articles with similar research topics were categorized into unified themes to clarify AI's role in corporate sustainable development. Following rigorous selection criteria, 54 articles were systematically incorporated and organized into seven distinct thematic clusters.

The specific sources of the incorporated literature are detailed as follows:

Table 2 Literally resources

| Sources                                    | Number of Articles |
|--------------------------------------------|--------------------|
| Sustainability                             | 22                 |
| International Review of Financial Analysis | 5                  |
| Technology in Society                      | 4                  |
| Economic Analysis and Policy               | 3                  |
| Information & Management                   | 2                  |

Table 2 (continued)

| Sources                                                       | Number of Articles |
|---------------------------------------------------------------|--------------------|
| Humanities and Social Science Communications                  | 1                  |
| APPLIED ECONOMICS                                             | 1                  |
| Sustainable Energy Technologies and Assessments               | 1                  |
| Systems                                                       | 1                  |
| Journal of Strategy & Innovation                              | 1                  |
| Finance Research Letters                                      | 1                  |
| Energy Economics                                              | 1                  |
| Procedia Computer Science                                     | 1                  |
| International Journal of Production Economics                 | 1                  |
| APPLIED ECONOMICS LETTERS                                     | 1                  |
| Technological Forecasting & Social Change                     | 1                  |
| Journal of Cleaner Production                                 | 1                  |
| International Journal of Information Management Data Insights | 1                  |
| Journal of Environmental Management                           | 1                  |
| Gondwana Research                                             | 1                  |
| Energy Policy                                                 | 1                  |
| International Review of Economics and Finance                 | 1                  |
| Resources Policy                                              | 1                  |

To ensure scientific rigor and accuracy during filtering, cross-validation was performed: research subgroups exchanged coded data tables for mutual verification. This process finalized the inclusion of

32 articles that strictly aligned with the research objectives. Considering that there were similar themes among the seven themes, the research team discussed and finally merged them into four themes.

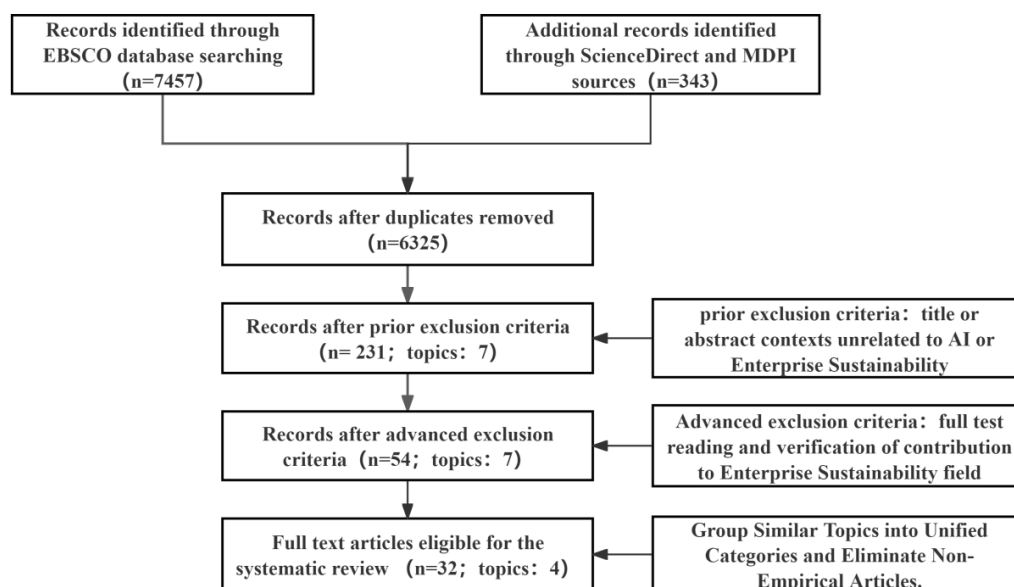


Figure 2 Selection process for the review

The selected literature was systematically categorized according to the predefined thematic classifications, resulting in the following distribution:

Human Resource Management: 6 articles; Performance Development: 7 articles; Business Transformation: 9 articles; Corporate Environmental, Social, and

Governance (ESG): 10 articles. This classification framework aligns with the research objectives, enabling

focused analysis of AI-driven sustainability practices across key operational dimensions.

Table 3 The themes and quantity of adopted articles

| Topics of Articles                  | Number of Articles |
|-------------------------------------|--------------------|
| Human Resource Management           | 6                  |
| Performance Development             | 7                  |
| Business Transformation             | 9                  |
| Environmental Social and Government | 10                 |

Based on the 32 included articles, the publication time of the literature was analyzed. The

distribution of publication time and quantity of the articles is shown in the figure.

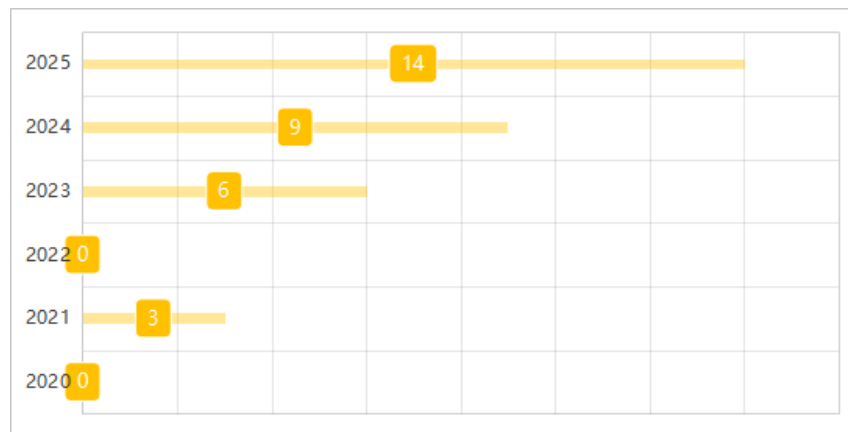


Figure 3 Publication time and quantity

### III. Findings

Through a review of existing literature, this paper constructs a conceptual framework illustrating how AI technology applications drive corporate sustainable development. The findings

reveal that AI adoption impacts environmental, social, and governance (ESG) performance by influencing corporate human resource management, performance development, and business transformation, thereby shaping the effectiveness of enterprises' sustainable development efforts.

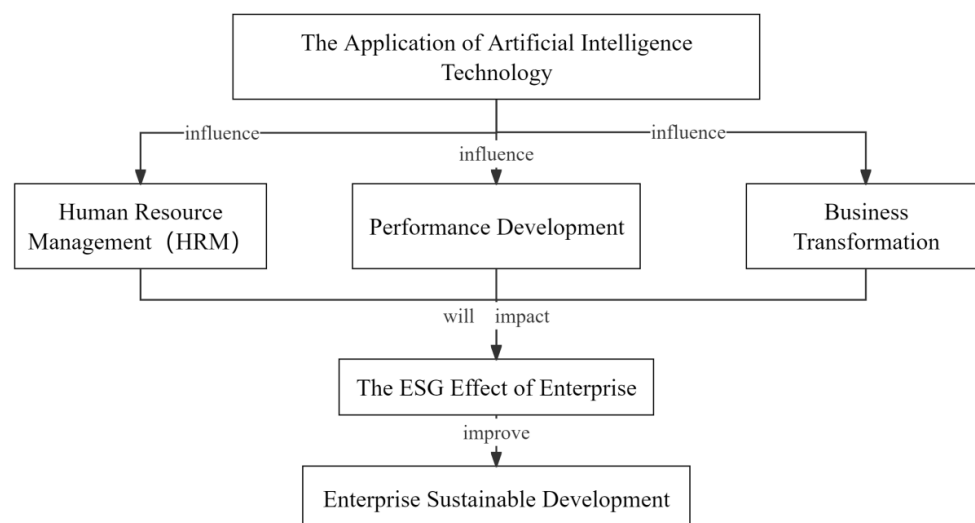


Figure 4 Technical transmission path

## A. Applications of AI Technology in Corporate Human Resource Management

Research on AI applications in HR management primarily focuses on four categories:

First, AI can be applied to HR decision-making to respond to organizational needs more objectively and rapidly, thereby enhancing the scientific rigor of decisions. Leveraging its unique strengths in knowledge acquisition and assimilation, AI systems integrate internal and external enterprise resources through on-premises deployment for deep learning, enabling rapid synthesis and innovation of corporate assets. The predictive analytics embedded in AI's external knowledge conversion capabilities generate responsive, objective, and effective targeted solutions in compressed timeframes. This approach mitigates decision-making biases stemming from human subjectivity while continuously reinforcing sustainable innovation competencies across management echelons.

Second, AI in recruitment processes. AI improves recruitment efficiency through two mechanisms: On the one hand, anthropomorphic AI chatbots engage candidates via interactive communication, attracting potential applicants and screening talent pools using machine algorithms to match organizational requirements. On the other hand, AI-powered monitoring systems track, record, and evaluate candidate responses during recruitment, enabling rapid identification of qualified personnel. This autonomous functionality assists HR teams in making accurate hiring decisions, boosts confidence in candidate selection, and optimizes recruitment efficiency.

Third, AI across employee full life circle Management. AI technology permeates the entire human resource management information system and employee full life circle, influencing workplace psychology through its practical applications. From

the initial onboarding stage, anthropomorphic AI assistants integrate into the workplace via intelligent agents, collaborating with employees to enhance task efficiency. This interaction not only improves employees' acceptance of AI but also accelerates their adaptation to evolving work demands. During employee development, AI leverages advanced natural language processing and open-source information capabilities to facilitate training and performance management, fostering innovative collaboration and talent retention strategies. At the offboarding phase, AI streamlines exit procedures within HR systems while analyzing resignation causes and turnover rates to refine management practices, providing decision-making support and optimizing operational workflows.

Fourth, AI perception and employee impacts. AI awareness and employee perceptions significantly influence employees' willingness, attitudes, and sense of responsibility in adopting AI technologies. Specifically, heightened AI consciousness negatively correlates with employees' participation in sustainable work practices while increasing job stress; employees' technological self-efficacy acts as a negative moderator between AI awareness and stress levels; perceived risks associated with AI directly heighten resistance to its adoption; and proactive leadership incentives motivate employees to effectively leverage AI tools like chatbots, capitalize on technical workforce competencies, and advance organizational sustainability.

## B. Applications of AI Technology in Corporate Performance Development

For enterprises, the sustainability of supply chains is critically important. It not only helps reduce production costs but also mitigates the negative environmental impacts generated during corporate development, playing a positive role in

enhancing economic returns and fostering healthy market growth. In intelligent service systems, chatbots can improve communication experiences through sales engagement and customer engagement, thereby enhancing the responsiveness and transparency of supply chains. This strengthens the sustainability of supply chains for small and medium-sized manufacturing enterprises, where mediating variables such as information-sharing capability play a pivotal role.

Regarding financial sustainability, the operational capabilities of artificial intelligence can synergize with human services to meet industry demands in the financial sector. Chatbots can rapidly respond to the needs of younger clients when servicing existing products, while also resolving customer issues through their automated systems. Research has found that the heterogeneity of AI impacts corporate sustainability performance. The use of AI robots proves more efficient for mature businesses with smaller transaction volumes, enabling significant savings in transaction and administrative costs. Integrating AI chatbots into corporate information service systems complements human services, injecting new vitality into revenue generation in the financial industry.

In corporate production processes, technological innovation serves as a key driver of productivity improvement. Through promoting technological innovation and replacing low-skilled labor, AI applications influence total factor productivity. On one hand, AI enables enterprises to analyze user behavior and consumption preferences in depth, facilitating the development of personalized products tailored to specific usage scenarios and needs. Through targeted marketing, AI enhances market share. Meanwhile, AI technologies reshape labor structures via "substitution effects" and "income effects," driving transformation and

upgrading in production processes. AI-driven technological progress stimulates demand for high-skilled labor, triggers structural workforce changes, and ultimately enhances production efficiency—though these effects vary across industries and enterprise scales.

### C. Applications of AI Technology in Corporate Business Transformation

For enterprise business management and transformation, AI technology optimizes market environments and drives internal technological innovation through efficient data collection, analysis, and utilization, fostering sustainable development and accelerating the shift toward green and environmentally friendly operations. Traditional enterprises, particularly in manufacturing, face persistent challenges such as severe resource depletion, low production efficiency, and environmental pollution during business expansion. Ensuring green transformation while maintaining economic benefits has become a core concern for small and medium-sized enterprises. Digital technology, with its unique capabilities in information absorption and transformation, balances development conflicts, modernizes production techniques, streamlines workflows, and improves resource efficiency, offering distinct advantages in promoting green business innovation. Furthermore, AI technology is widely adopted in traditional manufacturing due to its ability to optimize resource allocation and reduce market information asymmetry, accelerating sustainable industrial transformation.

For business innovation, intelligent transformation significantly enhances the quantity and quality of green innovation, primarily by attracting institutional investor attention, increasing media exposure, strengthening internal control quality, and advancing human capital. Resource-



Based Theory (RBT) and Absorptive Capacity Theory (ACAP) posit that AI improves enterprises' ability to assimilate both internal and external resources. This not only accelerates the efficiency of conventional resource utilization but also optimizes redundant resource allocation, fostering a healthy innovation ecosystem. By balancing resource investment with technological absorption capacity, AI helps enterprises signal transformation commitments to external stakeholders, catalyze innovation outcomes, and enhance the efficiency and quality of internal governance and structural adjustments, thereby integrating intelligent transformation with green innovation.

From the perspective of service quality and efficiency, AI holds immense potential to boost productivity and drive structural change. AI-driven data analytics plays a vital role in refining decision-making processes, optimizing resource allocation, and improving sustainable operational practices. Leveraging AI's analytical prowess enhances demand forecasting, risk assessment, and real-time monitoring visibility—critical elements for enterprise growth. Through supply chain exploration and development, AI improves resource efficiency and low-carbon initiatives, directly or indirectly influencing green sustainability. On the other hand, as consumers increasingly prioritize service quality and experience, AI-powered service robots outperform manual services in handling routine tasks by responding swiftly to customer needs and meeting expectations. However, during service delivery, AI adoption faces challenges related to user acceptance. Thus, integrating AI must align with user preferences to enhance customer retention rates effectively.

#### D. Applications of AI Technology in Corporate ESG Effect

The application of AI technology in

enterprise human resource management, business transformation, and performance development essentially involves the management and reconfiguration of an organization's human, financial, and material resources. By integrating internal and external resources, enterprises can balance the tension between profitability and sustainable growth, maintaining economic performance while driving green innovation and establishing an internally sustainable industrial ecosystem.

From an environmental perspective, in the current era emphasizing green production, enterprises must adhere to the principle that "green mountains and clear waters are as valuable as gold and silver." This requires prioritizing environmental benefits during production processes, minimizing pollution and carbon emissions to ensure long-term viability. AI technology integrates green innovation initiatives with industrial development, leveraging emerging technologies to optimize production workflows, enhance resource allocation efficiency, reduce energy waste, lower pollutant emissions, and improve environmental performance.

From the perspective of social benefits, enterprises must focus not only on economic gains during their development but also on reducing negative "externalities" imposed on society. In the process of implementing AI technologies, particularly for small and micro enterprises, the business ethics of practitioners play a mediating role. Guided by positive business ethics, the application of AI can alleviate labor pressures on workers, accelerate the translation of scientific and technological achievements into practical solutions, and advance the realization of "technology serving life".

From a corporate governance perspective, AI technology is no longer merely a "business



support tool" in enterprise development but functions as a "quasi-human assistant," reshaping organizational structures into a "management-employee-business operations" framework. It deeply integrates into all stages of enterprise development, simplifying decision tracking and activity processes while enhancing transparency in organizational workflows. This integration of AI also improves employees' adaptive capabilities, reduces resistance to technological adoption, and fosters a culture of responsible corporate ethics and value perception among staff. Ultimately, this drives enterprises toward low-energy-consumption, high-value-added development models.

#### IV. Framework Construction

Based on the systematic literature review, this study constructs a new operational framework for AI-driven corporate sustainable development. Effective utilization of AI technologies enables enterprises to reconfigure human, material, and financial resources, thereby enhancing resource conservation, environmental protection, and governance efficacy. These improvements generate positive effects on environmental, social, and governance performance, accelerating corporate growth. As enterprises benefit from AI dividends, they increase investments in AI R&D and deployment, establishing a virtuous cycle that extends from individual firms to entire industry value chains.

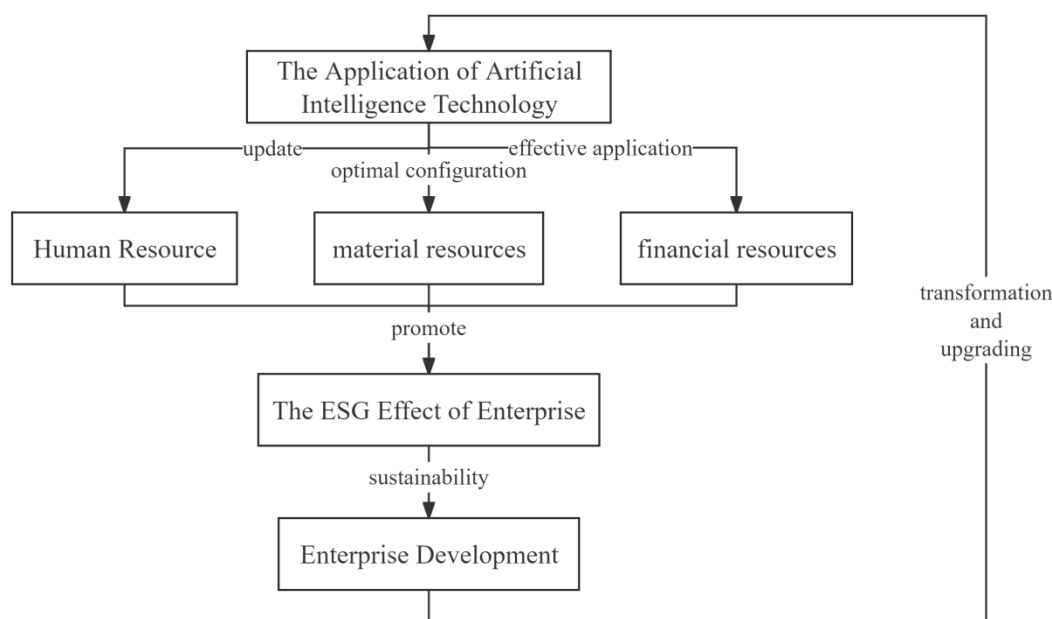


Figure 5 The new operating framework

#### V. Summarize

##### A. Research Findings and Implications

This study systematically examines the role of AI technology applications in advancing corporate sustainable development through a comprehensive literature review. The findings reveal that AI, as a pivotal outcome of the information technology

revolution, significantly enhances organizational growth. Academic research in this domain has evolved progressively across three analytical levels: individual→organizational→industrial, with a predominant focus on AI implementations in manufacturing and service sectors.

The literature highlights that enterprises in these industries face challenges such as evolving

industry standards, human resource structural constraints, and resource limitations. Integrating AI into corporate development processes enables the consolidation of industry resources and drives green innovation, aligning with contemporary sustainability imperatives.

Analysis of enterprise and industry case studies demonstrates AI's critical advantages in information aggregation, resource optimization, and green innovation, which collectively empower sustainable business practices and foster healthy industry competition.

### B. Future Directions

The study advocates a paradigm shift from an instrumentalist approach—treating AI merely as a developmental tool—to a constructivist framework. This entails localized AI deployment tailored to specific corporate objectives, iterative system adaptations, and the cultivation of contextualized business assistants that embody organizational uniqueness. Such reconfiguration positions AI as an embedded strategic partner rather than a peripheral technological supplement.

## VI. Implications and Limitations

### A. Theoretical Implications

This review systematically synthesizes existing literature on factors influencing corporate sustainable development, revealing predominant reliance on instrumentalist perspectives in current AI application studies. Building upon this foundation, we propose a constructivist framework that conceptualizes AI as a developmental ecosystem architect rather than mere technological implementer. This paradigm shift enables the establishment of an AI-empowered sustainability value chain encompassing strategic alignment, capability codification, and

institutional embedding.

### B. Practical Implications

From a practical perspective, the research team found that in the process of artificial intelligence technology boosting corporate sustainable development, it is necessary to give full play to its advantages in information processing and green innovation, and reasonably allocate the human, material and financial resources owned by enterprises. This paper proposes to shape the "human-like role" of artificial intelligence, build the image of artificial intelligence as an information collector and architecture manager in the process of enterprise development, and through deep integration with enterprises, make artificial intelligence an indispensable part of the enterprise sustainable development process.

### C. Limitations

First, as a review article, due to reasons such as the unavailability of partial data in the database retrieval process, the one-sidedness of retrieval strings, and the subjectivity of the manual screening process, there is a certain bias in the inclusion of literature. Some fitting articles may not have been included in the text pool of this paper. Second, future research in related fields can further expand database extraction, incorporate more relevant studies from other disciplines, and deeply explore the application of artificial intelligence technology in promoting sustainable development. In addition, although this paper also discusses the impact of artificial intelligence technology on environmental and social performance in the process of empowering corporate sustainable development, the research still focuses more on the perspective of enterprises. In the future, when studying related contents, the importance of this proposition can be verified from the perspectives of social progress,

industry development, technological iteration, etc.

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