

AI as the Third Pillar: Reconceptualizing HRM and Finance for Sustainable Entrepreneurship in Asia



¹Dr. Neeraja Kalluri, ²Prof. (Dr.) Abhijit Ghosh, ³Mohamed Shafeeq, ⁴Dr. Hardik Dhull, ⁵Dr. Manika Garg

¹RVisiting professor, Narsee Monjee Institute of Management Studies, Mumbai.

²Reader- Food & Beverage service, Hotel & Hospitality Management, EILM, Kolkata.

³Research Scholar, Commerce Department, VELS University Chennai.

⁴Assistant Professor, Matu Ram institute of Engineering and Management, Rohtak

⁵Senior Research Analyst, Fr. Assistant Professor, New Delhi.

Abstract

Artificial intelligence (AI) is transforming how organizations create, manage, and sustain entrepreneurial ventures. While sustainable entrepreneurship has traditionally relied on human resource management (HRM) and finance as its two foundational pillars, the growing integration of AI requires a reconceptualization of this framework. This conceptual paper proposes AI as the third strategic pillar that complements HRM and finance by enhancing decision making, resource optimization, innovation, and organizational resilience. The paper develops an integrated framework explaining how AI strengthens talent acquisition, employee development, financial planning, risk management, opportunity recognition, and sustainability performance. Based on Resource Based View (RBV), Dynamic Capabilities Theory, and Socio Technical Systems Theory, the framework illustrates how AI enables firms to build adaptive capabilities while supporting environmental, social, and economic objectives. The discussion focuses on the Asian context, where rapid digital transformation, entrepreneurial growth, and policy support present unique opportunities and challenges for AI enabled sustainable entrepreneurship. The paper also identifies institutional, ethical, regulatory, and technological factors that influence AI adoption across diverse Asian economies. By positioning AI as a strategic organizational capability rather than merely a technological tool, this study extends existing HRM and entrepreneurship literature and offers a new perspective for researchers, practitioners, and policymakers. The proposed framework provides a foundation for future empirical research examining the interactions among AI, HRM, finance, and sustainable entrepreneurial performance in emerging and developed Asian markets.

Keywords: Artificial intelligence (AI), human resource management (HRM), sustainable entrepreneurship

Introduction

Adolescence represents one of the most formative and turbulent stages of human development, marked by rapid

Sustainable entrepreneurship has emerged as a strategic approach that integrates economic growth with environmental stewardship and social responsibility. Unlike conventional entrepreneurship, sustainable entrepreneurship focuses on creating long term value while addressing societal and ecological challenges through innovative business models and responsible resource utilization. Early studies defined sustainable entrepreneurship as entrepreneurial activity that simultaneously promotes economic development, environmental protection, and social wellbeing (Cohen & Winn, 2007; Shepherd & Patzelt, 2011; Schaltegger & Wagner, 2011). Over the past decade, the field has evolved from a niche research area into a multidisciplinary domain encompassing entrepreneurship, strategic management, sustainability, innovation, and organizational studies (Muñoz & Cohen, 2018; Rosário et al., 2022; Terán Yépez et al., 2020).

Human resource management (HRM) and finance have traditionally been regarded as the two organizational foundations that enable sustainable entrepreneurial success. Sustainable HRM develops human capabilities through responsible talent management, employee engagement, ethical leadership, continuous learning, and innovation-oriented cultures. Recent studies demonstrate that green HRM strengthens environmental performance by fostering exploratory innovation, developmental organizational cultures, and sustainable employee behaviours (Chang et al., 2025; Ojo et al., 2026; Kurniawan et al., 2025). Similarly, sustainable financial management supports entrepreneurial ventures by ensuring efficient resource allocation, investment in green innovation, financial resilience, and long-term value creation. Resource orchestration within small and medium enterprises (SMEs) further illustrates that coordinated management of financial and human resources enhances organizational sustainability and competitiveness (Chin et al., 2026). Contemporary reviews also highlight that sustainability-oriented HR practices have become central to organizational transformation and stakeholder value creation (Barghini et al., 2026).

Despite these developments, rapid advances in artificial intelligence (AI) are fundamentally transforming how entrepreneurial organizations create value, make strategic decisions, and achieve sustainability objectives. AI technologies, including machine learning, predictive analytics, natural language processing, intelligent automation, and generative AI, are reshaping recruitment, workforce planning, financial forecasting, risk assessment, customer engagement, and opportunity recognition. Rather than functioning solely as operational tools, AI systems increasingly augment organizational

capabilities by improving decision quality, accelerating innovation, and enabling real time adaptation to changing business environments (Gupta et al., 2023). These developments suggest that AI has evolved into a strategic organizational capability with implications extending beyond technological efficiency.

Recent scholarship has begun to examine the relationship between AI and sustainable entrepreneurship. AI driven analytics enhance environmental monitoring, optimize resource utilization, reduce operational waste, and improve strategic planning for sustainable ventures (Bickley et al., 2025). Studies also demonstrate that AI, when integrated with knowledge management and entrepreneurial capabilities, strengthens sustainable business performance, particularly among SMEs operating in emerging economies (Alshammakhi & Sheikh, 2025). Evidence from developing countries further indicates that AI complements financial planning and environmental consciousness in promoting sustainable entrepreneurial outcomes (Aguirre Benalcázar et al., 2025). Moreover, AI and big data technologies have significant economic, environmental, and social implications for entrepreneurial ecosystems by facilitating innovation while raising important governance and ethical challenges (Ojong, 2025).

Although existing research has independently examined sustainable HRM, financial management, and AI enabled entrepreneurship, these streams remain largely fragmented. Most studies conceptualize AI either as a technological innovation or as a digital support mechanism rather than as a fundamental organizational pillar. Consequently, limited attention has been devoted to understanding how AI interacts with HRM and finance to collectively shape sustainable entrepreneurial capabilities. This gap is particularly significant in Asia, where rapid digital transformation, expanding entrepreneurial ecosystems, supportive government policies, and diverse institutional environments are accelerating AI adoption across industries. Asian economies provide a unique context because firms simultaneously face opportunities associated with digital innovation and challenges related to technological readiness, workforce skills, regulatory governance, and responsible AI implementation.

This conceptual paper addresses this gap by proposing AI as the third strategic pillar of sustainable entrepreneurship alongside HRM and finance. Building on the Resource Based View (RBV), Dynamic Capabilities Theory, and Socio Technical Systems Theory, the paper develops an integrated conceptual framework explaining how AI complements human capital and financial resources to enhance innovation, resilience, opportunity recognition, and sustainability performance. The framework argues that sustainable entrepreneurial success increasingly depends on the

synergistic interaction of intelligent technologies, skill.

2. Literature Review

2.1 Sustainable Entrepreneurship: Evolution and Contemporary Perspectives

Sustainable entrepreneurship has evolved from a niche concept into a well-established research domain that integrates economic, environmental, and social objectives. Early studies viewed sustainable entrepreneurship as the process of identifying and exploiting opportunities arising from market imperfections while simultaneously generating environmental and societal benefits (Cohen & Winn, 2007). Gerlach (2003) highlighted the role of innovation in developing environmentally responsible enterprises, while Schaltegger and Wagner (2011) emphasized sustainability driven innovation as the foundation for competitive advantage. Shepherd and Patzelt (2011) further expanded the concept by arguing that sustainable entrepreneurs simultaneously address "what is to be sustained" and "what is to be developed," thereby balancing environmental preservation with economic progress. Subsequent literature has broadened the theoretical and practical understanding of sustainable entrepreneurship. Reviews by Terán Yépez et al. (2020) and Rosário et al. (2022) demonstrate that research has increasingly focused on innovation, stakeholder value creation, digital transformation, and sustainable business models. Muñoz and Cohen (2018) observed that the field has shifted from environmental entrepreneurship toward integrated sustainability strategies involving governments, organizations, and entrepreneurial ecosystems. Recent studies also indicate that sustainable entrepreneurship is becoming increasingly important in emerging economies because of rapid industrialization, climate challenges, and digital transformation (Zhang Zhang & Rajasekera, 2026).

2.2 Human Resource Management as a Driver of Sustainable Entrepreneurship

Human resource management has emerged as a strategic capability supporting sustainable entrepreneurship through talent development, organizational learning, employee engagement, and innovation. Barrett and Mayson (2008) argued that entrepreneurial success depends largely on effective HR practices that align employee capabilities with organizational objectives. More recently, sustainable HRM has expanded beyond traditional workforce management by incorporating environmental responsibility, ethical leadership, employee wellbeing, and digital resilience.

Green HRM has received significant attention as an important mechanism for improving sustainability performance. Chang et al. (2025) demonstrated that green HRM enhances Sustainable Development Goal (SDG) performance through exploratory innovation and developmental organizational culture. Similarly, Ojo et al. (2026) found that green entrepreneurial orientation strengthens the relationship between

green HRM and environmental performance. Kurniawan et al. (2025) proposed a conceptual framework integrating green HRM, ethical leadership, and digital resilience as essential components for advancing sustainable development.

Research also indicates that socially responsible HRM promotes organizational innovation and corporate reputation among entrepreneurial firms (Ramos González et al., 2022). Ren and Jackson (2020) argued that HRM plays an institutional entrepreneurial role by embedding sustainability within organizational systems and practices. Jiang et al. (2025) further demonstrated that sustainable entrepreneurial orientation and green HRM jointly enhance employee innovative behaviour through corporate social responsibility. Likewise, Singh et al. (2025), Yan (2025), and Yadav et al. (2023) emphasized that electronic HRM, sustainable organizational culture, employee motivation, and digital workforce management have become critical enablers of sustainable entrepreneurial performance.

Despite these contributions, existing HRM literature primarily examines workforce sustainability and organizational performance independently, with limited integration of AI enabled human resource capabilities within sustainable entrepreneurship.

2.3 Finance and Sustainable Entrepreneurship

Financial capability represents another essential pillar supporting sustainable entrepreneurship. Access to financial resources enables entrepreneurs to invest in innovation, environmental technologies, and long-term organizational growth. Sustainable finance has evolved beyond profitability by incorporating environmental, social, and governance (ESG) considerations into investment and financial decision making.

Green finance has emerged as a major facilitator of sustainable entrepreneurial activity. Bhatnagar et al. (2022) found that green finance significantly supports the development of green startups in India by improving access to sustainable investments. Similarly, Sadiq et al. (2022) reported that green finance positively influences sustainable entrepreneurship and environmental corporate social responsibility. Raimi and Bamiro (2026) further demonstrated that Islamic sustainable finance promotes green entrepreneurship while contributing to the achievement of Sustainable Development Goals in emerging Muslim economies.

Financial literacy also plays a critical role in entrepreneurial sustainability. Burchi et al. (2021) showed that financially literate entrepreneurs make more sustainable investment decisions and effectively manage business risks. Ferdousi (2015) found that microfinance enhances sustainable entrepreneurial development by improving financial inclusion among small entrepreneurs. Recent research has extended sustainable finance toward digital platforms. Reza Gharehbagh et al. (2023) argued that digital supply chain finance strengthens green entrepreneurship by improving transparency, collaboration, and resource

efficiency. Similarly, Al Hattami et al. (2026) demonstrated that green digital accounting positively influences financial sustainability and entrepreneurial performance.

Although finance literature recognizes the importance of digital technologies, AI remains largely examined as a financial support tool rather than as an integrated strategic capability interacting with HRM and entrepreneurship.

2.4 Artificial Intelligence and Sustainable Entrepreneurship

Artificial intelligence has become one of the most transformative technologies influencing entrepreneurial ecosystems. AI enables organizations to automate routine activities, analyse complex datasets, predict market trends, optimize resource allocation, and improve strategic decision making. Gupta et al. (2023) reviewed AI based technologies and concluded that AI significantly contributes to sustainable entrepreneurship by improving innovation capability, operational efficiency, and environmental sustainability.

Recent empirical studies further support AI's strategic role. Alshammakhi and Sheikh (2025) found that AI integrated with knowledge management enhances sustainable entrepreneurship among SMEs in emerging economies. Aguirre Benalcázar et al. (2025) demonstrated that AI, financial planning, and environmental consciousness jointly improve sustainable entrepreneurial outcomes in Ecuador. Similarly, Bickley et al. (2025) highlighted that AI and big data technologies create new opportunities for sustainable value creation through intelligent decision support and predictive analytics.

Beyond operational efficiency, AI also influences sustainability through economic, environmental, and social pathways. Ojong (2025) argued that AI enables resource optimization, environmental monitoring, and social innovation while simultaneously creating governance, ethical, and regulatory challenges. These findings indicate that AI is gradually evolving into a strategic organizational capability capable of transforming entrepreneurial ecosystems. Nevertheless, current studies generally investigate AI independently or alongside knowledge management and digital transformation. Few studies conceptualize AI as a foundational organizational pillar operating simultaneously with HRM and finance.

Integrating HRM, Finance, and AI for Sustainable Entrepreneurship

Emerging research increasingly recognizes that sustainable entrepreneurship depends upon the effective integration of organizational resources rather than isolated capabilities. Chin et al. (2026), drawing on Resource Orchestration Theory, argued that sustainable business performance among SMEs depends upon coordinating financial, human, and strategic resources. Similarly, Al Abbadi and Abu Rumman (2023) demonstrated that entrepreneurship, innovation, and green HRM collectively improve sustainable organizational performance in e business

firms.

Recent entrepreneurship literature also highlights the importance of entrepreneurial ecosystems, social capital, and entrepreneurial orientation in promoting sustainable venture development (Nazir et al., 2026; Reshi et al., 2025; Saqib & Reshi, 2025). Studies by Bashir and Saqib (2023), Shah and Saqib (2023), Khan et al. (2022), Saqib et al. (2025), Satar and Natasha (2019), and Satar et al. (2026) further demonstrate that entrepreneurial competencies, social networks, personality, learning, emotions, and entrepreneurial orientation significantly influence entrepreneurial success across different institutional settings.

Collectively, these studies suggest that sustainable entrepreneurship increasingly requires complementary organizational capabilities involving human resources, financial management, digital technologies, innovation, and entrepreneurial leadership.

Research Gap

Although substantial research has examined sustainable entrepreneurship, sustainable HRM, green finance, AI, entrepreneurial orientation, and organizational sustainability, these streams remain fragmented. Existing studies predominantly investigate HRM, finance, or AI independently, with limited theoretical integration. AI is generally viewed as a technological enabler rather than a strategic organizational pillar that complements human capital and financial capability. Furthermore, limited conceptual attention has been given to understanding how AI interacts simultaneously with HRM and finance to strengthen sustainable entrepreneurship, particularly within the diverse institutional and digital contexts of Asian economies.

This conceptual paper addresses this gap by proposing AI as the third strategic pillar of sustainable entrepreneurship. By integrating insights from HRM, finance, AI, and entrepreneurship literature, the study develops a comprehensive conceptual framework explaining how these three organizational capabilities jointly promote innovation, resilience, sustainable value creation, and long term entrepreneurial success in Asia.

3. Methodology

Research Design: This study adopts a conceptual research design to develop a theoretical framework that positions artificial intelligence (AI) as the third strategic pillar of sustainable entrepreneurship, complementing human resource management (HRM) and finance. Unlike empirical studies that test hypotheses using primary or secondary data, conceptual research synthesizes existing theoretical and empirical knowledge to generate new perspectives and advance theory development (Jaakkola, 2020). The objective of this paper is to integrate fragmented literature on sustainable entrepreneurship, AI, HRM, and finance into a unified conceptual model applicable to the Asian context.

Literature Identification: The literature review was

conducted using the Scopus and Web of Science Core Collection databases because they provide comprehensive coverage of highquality peer reviewed journals in management, entrepreneurship, sustainability, finance, and information systems.

The search focused on studies published between 2003 and 2026, capturing the evolution of sustainable entrepreneurship together with recent developments in AI, sustainable HRM, and sustainable finance.

The following keywords and Boolean operators were used:

"Sustainable Entrepreneurship"

"Artificial Intelligence" AND "Entrepreneurship"

"Green Human Resource Management"

"Sustainable Human Resource Management"

"Green Finance"

"Sustainable Finance"

"Artificial Intelligence" AND "Sustainability"

"Digital Transformation" AND "Entrepreneurship"

"HRM" AND "Sustainability"

"Finance" AND "Sustainable Entrepreneurship"

Study Selection

Only peer reviewed journal articles indexed in Scopus or Web of Science were considered. The inclusion criteria were:

- Articles published in English.
- Studies addressing sustainable entrepreneurship, AI, HRM, finance, sustainability, or related organizational capabilities.
- Conceptual, empirical, review, and theoretical studies published in reputable journals. The exclusion criteria included:
- Conference papers, book reviews, editorials, dissertations, and unpublished manuscripts.
- Studies not directly related to organizational sustainability or entrepreneurship.
- Duplicate records across databases.

After screening titles, abstracts, and full texts, the selected literature was retained for conceptual synthesis.

Data Analysis

The selected studies were analysed using a thematic literature synthesis approach. The literature was systematically reviewed to identify recurring concepts, theoretical arguments, and emerging relationships among AI, HRM, finance, and sustainable entrepreneurship.

The synthesis generated four major themes:

- Sustainable entrepreneurship and value creation.
- Sustainable HRM as a source of organizational capability.
- Sustainable finance as an enabler of entrepreneurial growth.
- Artificial intelligence as a strategic capability for innovation and sustainability.
- Relationships among these themes were then integrated to develop the proposed conceptual framework.

Theoretical Foundation

The conceptual framework is grounded in three complementary theories.

Resource Based View (RBV) explains that sustainable competitive advantage arises from valuable, rare, inimitable, and non substitutable organizational resources. HRM, finance, and AI are conceptualized as strategic organizational resources that jointly enhance sustainable entrepreneurship.

Dynamic Capabilities Theory explains how organizations continuously integrate, reconfigure, and renew their resources to respond to changing environments. AI enhances these capabilities by improving learning, prediction, decision making, and organizational adaptability.

Socio Technical Systems Theory recognizes that organizational performance results from the interaction between people and technology. This perspective provides the theoretical basis for integrating AI with human resources and financial systems to achieve sustainable entrepreneurial outcomes.

Conceptual Framework Development

Following the literature synthesis, a conceptual framework was developed in which:

Human Resource Management strengthens human capital, innovation, employee engagement, and organizational learning.

Finance provides financial resilience, investment capability, and resource allocation for sustainable growth.

Artificial Intelligence enhances intelligent decision making, predictive analytics, automation, opportunity recognition, and strategic adaptability.

The interaction among these three pillars is proposed to improve:

- Sustainable innovation.
- Organizational resilience.
- Resource optimization.
- Environmental performance.
- Social value creation.
- Long term entrepreneurial success.

The framework is particularly relevant for Asian economies, where rapid digital transformation, growing entrepreneurial ecosystems, and sustainability initiatives create favourable conditions for AI enabled sustainable entrepreneurship.

Rather than testing causal relationships, this methodology develops a theoretically grounded framework that integrates previously disconnected streams of literature. The proposed model provides a foundation for future empirical studies employing structural equation modelling, longitudinal research, comparative cross-country analyses, or mixed methods designs to validate the proposed relationships among AI, HRM, finance, and sustainable entrepreneurship.

4. Conceptual Model

AI as the Third Pillar of Sustainable Entrepreneurship: Integrating HRM and Finance

This study proposes that sustainable entrepreneurship is built upon three mutually reinforcing strategic pillars: Human Resource

Management (HRM), Finance, and Artificial Intelligence (AI). Traditional entrepreneurship literature identifies human capital and financial resources as the primary organizational capabilities driving entrepreneurial success. However, rapid technological advancement has transformed AI from an operational technology into a strategic organizational capability that complements and enhances both HRM and finance. Consequently, sustainable entrepreneurial performance depends on the interaction among these three pillars rather than on any single organizational resource.

Pillar 1: Human Resource Management

Sustainable HRM focuses on developing employees' knowledge, skills, innovation capability, ethical behaviour, and environmental commitment. Green HRM practices, employee training, leadership development, talent management, and knowledge sharing creates a workforce capable of supporting sustainable innovation and organizational resilience (Chang et al., 2025; Kurniawan et al., 2025; Ojo et al., 2026). HRM also strengthens organizational learning and facilitates the adoption of emerging technologies, including AI.

Pillar 2: Sustainable Finance

Finance provides the capital necessary for innovation, digital transformation, environmental investments, and long-term business sustainability. Green finance, financial planning, digital accounting, financial literacy, and sustainable investment enable entrepreneurial firms to allocate resources efficiently while balancing profitability with environmental and social objectives (Bhatnagar et al., 2022; Burchi et al., 2021; Al Hattami et al., 2026). Financial capability also supports AI adoption by providing investments in digital infrastructure and technological innovation.

Pillar 3: Artificial Intelligence

Artificial intelligence represents the third strategic pillar of sustainable entrepreneurship. AI extends beyond automation by supporting intelligent decision making, predictive analytics, opportunity recognition, customer insights, resource optimization, financial forecasting, talent analytics, and innovation management (Gupta et al., 2023; Bickley et al., 2025; Alshammakhi & Sheikh, 2025). AI complements HRM through intelligent recruitment, workforce analytics, personalized learning, and employee performance management. Simultaneously, AI strengthens financial management through fraud detection, investment optimization, risk prediction, and strategic planning.

Interaction Among the Three Pillars

The conceptual model argues that sustainable entrepreneurial success emerges from the integration of these three organizational capabilities.

HRM develops the human competencies required to effectively implement AI and manage sustainable business practices. Finance provides the resources required for technological investment and organizational growth. AI enhances the effectiveness of both HRM and finance by improving the quality, speed, and accuracy of organizational decision making.

Together, these three pillars create dynamic organizational capabilities that improve innovation, adaptability, and sustainable value creation.

The interaction among HRM, finance, and AI produces several organizational outcomes, including:

- Sustainable innovation
- Opportunity recognition
- Resource optimization
- Organizational resilience
- Environmental performance
- Social value creation
- Long term competitive advantage
- Sustainable entrepreneurial performance
- Theoretical Underpinning

The proposed conceptual model is grounded in three complementary theories.

Resource Based View (RBV) explains that HRM, finance, and AI represent valuable organizational resources capable of generating sustainable competitive advantage.

Dynamic Capabilities Theory explains how organizations integrate and continuously reconfigure these strategic resources to respond to changing market and technological environments.

Socio Technical Systems Theory emphasizes that organizational performance depends on the effective interaction between people, financial systems, and intelligent technologies.

Collectively, these theories support the argument that AI should no longer be viewed merely as a technological tool but as a strategic organizational capability operating alongside HRM and finance.



Figure 1. Conceptual Model

Source: Authors Own Work

This conceptual model provides the theoretical foundation for future empirical studies examining the combined effects of AI, HRM, and finance on sustainable entrepreneurship, particularly within rapidly digitalizing Asian economies.

5. Discussion

This conceptual paper advances sustainable entrepreneurship literature by proposing artificial intelligence (AI) as the third strategic pillar, complementing human resource management (HRM) and finance. While previous research has recognized the importance of human capital and financial resources in supporting entrepreneurial sustainability (Barrett & Mayson, 2008; Burchi et al., 2021; Chang et al., 2025), AI has largely been examined as a technological tool rather than a core organizational capability. The proposed framework argues that AI has evolved into a strategic resource that strengthens organizational adaptability, innovation, and long-term value creation.

The findings from the reviewed literature indicate that sustainable HRM develops employee competencies, organizational learning, ethical leadership, and innovation capabilities necessary for sustainable entrepreneurial success (Chang et al., 2025; Kurniawan et al., 2025; Ojo et al., 2026). However, the growing complexity of business environments requires organizations to complement human capabilities with intelligent technologies. AI enhances HRM by improving recruitment, workforce

analytics, employee training, performance management, and knowledge sharing. Consequently, HRM and AI should be viewed as complementary rather than competing organizational capabilities.

Similarly, finance remains fundamental for entrepreneurial growth by providing investment capital, supporting innovation, and enabling environmental and social initiatives (Bhatnagar et al., 2022; Raimi & Bamiro, 2026). Digital financial systems and green finance have improved resource allocation and organizational resilience. AI further strengthens financial capability through predictive analytics, intelligent budgeting, financial forecasting, fraud detection, and investment optimization. This interaction allows entrepreneurial firms to make faster and more informed financial decisions while reducing uncertainty and operational risks.

The proposed framework also contributes to sustainable entrepreneurship theory by integrating three complementary theoretical perspectives. From the Resource Based View, HRM, finance, and AI represent valuable organizational resources that collectively create sustainable competitive advantage. Dynamic Capabilities Theory explains how firms continuously integrate these resources to respond to technological and market changes. Socio Technical Systems Theory further suggests that organizational performance depends on the effective interaction between human expertise and intelligent technologies. Together, these theories provide a comprehensive

explanation of why AI should be considered a strategic organizational pillar rather than merely an operational technology.

The Asian context provides a particularly relevant setting for this conceptualization. Countries such as China, India, Singapore, South Korea, Malaysia, and the United Arab Emirates are investing heavily in AI, digital entrepreneurship, and sustainable development. At the same time, many Asian economies face institutional diversity, varying levels of technological readiness, regulatory differences, and workforce skill gaps. These conditions make the integration of HRM, finance, and AI essential for improving entrepreneurial resilience and competitiveness. Organizations that successfully combine skilled employees, sustainable financial practices, and intelligent technologies are more likely to achieve innovation, operational efficiency, and long-term sustainability.

The framework also has important managerial implications. Business leaders should move beyond treating AI as a standalone technological investment and instead integrate it into strategic HRM and financial decision making. Investments in employee digital skills, AI governance, ethical leadership, and sustainable financial planning should occur simultaneously to maximize organizational performance. Policymakers can support this transition by developing AI governance frameworks, promoting digital infrastructure, strengthening entrepreneurial ecosystems, and encouraging responsible AI adoption among SMEs.

This study also identifies several avenues for future research. The proposed framework requires empirical validation across different industries and Asian economies. Future studies may examine the direct and indirect relationships among AI capability, sustainable HRM, financial capability, innovation, and sustainable entrepreneurial performance using structural equation modelling or longitudinal research designs. Comparative studies between developed and emerging Asian economies may also provide valuable insights into the institutional factors influencing AI enabled sustainable entrepreneurship.

Hence, this paper extends existing knowledge by repositioning AI from a supporting technology to a strategic organizational pillar. Sustainable entrepreneurship in the digital economy is no longer driven solely by human resources and financial capital. Instead, long term entrepreneurial success increasingly depends on the integrated capabilities of HRM, finance, and AI, working together to create sustainable economic, environmental, and social value.

6. Conclusion

Sustainable entrepreneurship is undergoing a fundamental transformation as organizations increasingly integrate digital technologies into their strategic and operational activities. While human resource management (HRM) and finance have traditionally served as the primary organizational pillars supporting entrepreneurial success, the rapid

advancement of artificial intelligence (AI) necessitates a broader conceptualization of the resources required to achieve sustainable competitive advantage. This paper responds to this need by proposing AI as the third strategic pillar of sustainable entrepreneurship.

Drawing on the Resource Based View, Dynamic Capabilities Theory, and Socio Technical Systems Theory, the study develops a conceptual framework demonstrating that sustainable entrepreneurial performance is strengthened through the synergistic interaction of HRM, finance, and AI. HRM develops the human capabilities required for innovation and organizational learning, finance provides the resources necessary for sustainable growth and technological investment, and AI enhances decision making, resource optimization, opportunity recognition, and organizational adaptability. Together, these three strategic capabilities enable entrepreneurial firms to create economic, environmental, and social value while improving long term resilience and competitiveness.

The paper also extends existing literature by integrating previously fragmented research on sustainable HRM, sustainable finance, AI, and entrepreneurship into a unified theoretical framework. Rather than viewing AI as a supporting technology, this study positions it as a strategic organizational capability that complements human and financial resources. This perspective reflects the realities of the digital economy, where intelligent technologies increasingly influence entrepreneurial decision making, innovation, and sustainability outcomes.

The proposed framework is particularly relevant for Asian economies, where accelerating digital transformation, expanding entrepreneurial ecosystems, and sustainability initiatives provide significant opportunities for AI enabled entrepreneurship. At the same time, successful implementation requires investments in digital skills, responsible AI governance, supportive financial systems, and effective institutional frameworks.

Hence, this conceptual paper contributes to sustainable entrepreneurship literature by introducing a new perspective on the strategic role of AI in organizational sustainability. The framework provides a foundation for future empirical research and offers practical guidance for entrepreneurs, managers, and policymakers seeking to build resilient and sustainable enterprises. As organizations continue to navigate increasingly dynamic and technology driven environments, the integration of HRM, finance, and AI will become a critical determinant of sustainable entrepreneurial success.

7. Implications

Theoretical Implications: This conceptual study makes several contributions to the sustainable entrepreneurship literature. First, it extends existing theory by proposing artificial intelligence (AI) as the third strategic pillar of sustainable entrepreneurship alongside human resource management (HRM) and

finance. Previous studies have primarily examined these constructs independently, with AI often viewed as a technological enabler rather than a core organizational capability. The proposed framework reconceptualizes AI as a strategic resource that complements human capital and financial capability in creating sustainable competitive advantage.

Second, the study integrates three previously fragmented research streams: sustainable HRM, sustainable finance, and AI enabled entrepreneurship. Existing literature has separately explored the contributions of green HRM, financial sustainability, and digital transformation to entrepreneurial success. This paper provides a unified theoretical perspective explaining how these organizational capabilities interact to promote sustainable entrepreneurial performance.

Third, the study enriches the theoretical understanding of sustainable entrepreneurship by combining the Resource Based View (RBV), Dynamic Capabilities Theory, and Socio Technical Systems Theory. This integrated perspective explains how organizations develop competitive advantage by effectively combining human resources, financial resources, and intelligent technologies. The framework therefore offers a foundation for future empirical research investigating the mechanisms through which AI strengthens organizational resilience, innovation, and sustainability.

Finally, the study contributes to entrepreneurship research in Asia by highlighting the importance of institutional context in AI adoption. It provides a conceptual basis for comparative studies examining how variations in digital infrastructure, regulatory environments, and entrepreneurial ecosystems influence the effectiveness of AI driven sustainable entrepreneurship.

Practical Implications: The proposed framework offers several practical implications for entrepreneurs, managers, policymakers, and educational institutions. For entrepreneurs, the study emphasizes that sustainable business success requires balanced investment in skilled employees, financial capability, and AI technologies. Entrepreneurs should integrate AI into strategic planning, opportunity recognition, customer engagement, operational management, and sustainability initiatives rather than treating AI solely as an automation tool.

For organizational leaders, the findings highlight the need to redesign HR practices to support AI adoption. Organizations should invest in employee upskilling, digital competencies, continuous learning, ethical AI awareness, and interdisciplinary collaboration. Green HRM and AI should operate together to improve innovation, employee productivity, and sustainable organizational performance.

For financial managers, the study suggests integrating AI into financial planning, investment analysis, budgeting, risk management, and sustainability reporting. AI supported financial systems can improve forecasting accuracy, optimize resource allocation,

reduce operational risks, and strengthen long term financial resilience.

For policymakers, the framework highlights the importance of creating supportive ecosystems for AI enabled sustainable entrepreneurship. Governments should invest in digital infrastructure, AI research, entrepreneurship support programs, and regulatory frameworks that encourage responsible AI adoption while addressing ethical concerns related to privacy, transparency, and algorithmic bias. Policies promoting green finance and digital transformation can further accelerate sustainable entrepreneurial development across Asian economies.

Educational institutions also play an important role. Universities and business schools should incorporate AI, digital entrepreneurship, sustainable finance, and sustainable HRM into entrepreneurship education. Interdisciplinary curricula can prepare future entrepreneurs and managers with the skills required to operate in AI enabled entrepreneurial ecosystems.

Research Implications: The proposed conceptual framework provides several opportunities for future research.

Future studies should empirically validate the relationships among AI capability, sustainable HRM, sustainable finance, and sustainable entrepreneurial performance using structural equation modelling, longitudinal studies, or mixed methods research. Researchers may also examine the mediating roles of innovation capability, organizational resilience, and knowledge management, as well as the moderating effects of institutional quality, digital readiness, firm size, and industry characteristics.

Cross country comparative studies across Asian economies can provide insights into how cultural, technological, and regulatory differences influence AI enabled sustainable entrepreneurship. Future research may also investigate sector specific applications of the framework in manufacturing, agriculture, healthcare, financial services, tourism, and digital platform businesses.

By providing a comprehensive conceptual foundation, this study encourages future scholarship to examine AI not simply as a technological innovation but as a strategic organizational capability that works jointly with HRM and finance to shape sustainable entrepreneurial success.

8. Limitations and Future Research Directions

This study has several limitations that provide opportunities for future research. First, the paper adopts a conceptual research design and does not empirically test the proposed relationships among artificial intelligence (AI), human resource management (HRM), finance, and sustainable entrepreneurship. Although the framework is grounded in established theories and recent literature, its validity requires empirical verification across different organizational and institutional settings.

Second, the study relies exclusively on published literature indexed in Scopus and Web of Science. While these databases ensure the inclusion of high-

quality peer reviewed research, relevant insights from industry reports, policy documents, conference proceedings, and practitioner literature were not considered. Future studies may incorporate these additional sources to obtain a more comprehensive understanding of AI enabled sustainable entrepreneurship.

Third, the framework is developed primarily for the Asian context, where digital transformation, entrepreneurial ecosystems, and institutional environments differ substantially across countries. The proposed relationships may therefore vary according to national culture, technological readiness, regulatory quality, and economic development. Comparative studies involving developed and emerging economies from Asia, Europe, Africa, and Latin America would improve the generalizability of the model.

Fourth, the proposed framework focuses on three strategic organizational pillars, namely HRM, finance, and AI. Other important determinants of sustainable entrepreneurship, including organizational culture, leadership, entrepreneurial orientation, innovation capability, institutional support, knowledge management, digital infrastructure, and stakeholder engagement, were not explicitly incorporated. Future research should examine how these factors interact with the proposed framework to explain sustainable entrepreneurial performance.

Future empirical studies should test the conceptual model using structural equation modelling (SEM), longitudinal designs, or mixed methods approaches. Researchers may investigate the direct, indirect, and interactive effects of AI, HRM, and finance on sustainable entrepreneurial outcomes. Potential mediating variables such as innovation capability, organizational resilience, digital transformation, knowledge management, and opportunity recognition should also be examined. Likewise, moderating variables including firm size, industry type, entrepreneurial ecosystem quality, institutional support, environmental uncertainty, and digital maturity may provide deeper insights into the boundary conditions of the proposed relationships.

Another promising avenue involves examining AI adoption across different sectors such as manufacturing, healthcare, agriculture, financial services, tourism, and digital platform businesses. Industry specific studies may reveal unique patterns of AI integration and sustainability outcomes. Future research should also explore the ethical dimensions of AI, including algorithmic bias, transparency, employee trust, data privacy, cybersecurity, and responsible AI governance, as these issues are becoming increasingly important for sustainable organizational development. Finally, future studies may develop and validate multidimensional measurement scales for AI capability as a strategic organizational resource within the context of sustainable entrepreneurship. Such measurement instruments would facilitate empirical testing of the proposed framework and

contribute to the advancement of theory on AI driven sustainable entrepreneurship. By addressing these limitations, future research can strengthen the theoretical and practical understanding of how AI, HRM, and finance jointly shape sustainable entrepreneurial success in the digital economy.

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