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Critical Review of Digital Innovation Literature and Artificial Intelligence as a Driver of Sustainable Competitiveness in the Era of Society 5.0

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ABSTRACT
This research examines how digital innovation and artificial intelligence shape sustainable economic competitiveness in the Society 5.0 era. To ensure a systematic and transparent research process, this research uses the Systematic Literature Review (SLR) method along with the PRISMA framework. A total of 200 articles published from 2016 to 2025 were found from the AI Index, Scopus, OECD, and World Bank databases. After going through the selection process based on inclusion and exclusion criteria, seven articles were selected for evaluation. Data is analyzed thematically to identify recurring problems related to technology, management, and inclusion. Research results show that AI-based digital innovation increases productivity, efficiency, and power savings, especially in countries with high digital readiness and adaptive governance. However, the digital divide, cyber security risks, and low digital literacy are still big problems, especially in developing countries. This study found that to maintain sustainable competition in the Society 5.0 era, technological advances, moral governance, and social inclusion must work together. Governments, educational institutions, and the world industry must work together to strengthen digital resilience, develop human resources, and ensure that the implementation of AI is carried out morally and inclusively.

Key words: digital innovation; artificial intelligence; sustainable; society 5.0; systematic literature review.

INTRODUCTION

The development of digital technology has caused significant changes in the global economy, where advances in artificial intelligence (AI), digital transformation, and technological innovation become the main drivers of growth and progress. In order to achieve social and economic stability, the Era of Economic Society 5.0 calls for a harmonious integration of technology with human values (Wibowo 2023). Various studies have highlighted the importance of AI and digital innovation in increasing productivity and efficiency as well as accelerating the economic transformation process in various sectors (Banerjee et al., 2023)

According to (Entezami et al. 2025), the growth of the digital economy affects the ability of a country or organization to adopt and maximize AI-based criteria, such as digital infrastructure, data analysis skills, and organizational innovation. However, Suljic's research (2025) shows that the success of digital transformation is not only due to technological advances but also strategic leadership and governance ethics that can affect the digitalization process in various ways. Among other things, (Hamdouna and Khmelyarchuk 2025) stated that technological innovation is the most important factor in the future, which requires cooperation between economic, social, and environmental dimensions.

However, most of the research so far has focused on conceptual analysis and has not fully explained the relationship between digital innovation, digital transformation, and economic growth in the context of society 5.0. In addition, the human-centered economic and social implications of digitalization have not been thoroughly examined empirically (Lukianenko et al. 2024). Conditions show that there is a research gap in understanding how digital innovation can be used as a major, inclusive, and sustainable economic transformation.

Based on the analysis, the purpose of this study is to examine in detail the relationship between digital innovation and economic transformation in the context of Society 5.0 by highlighting examples, opportunities, and relevant policy strategies that support economic development based on innovative and inclusive technological progress.

METHOD

The study of this use is a qualitative approach with a literature study design (literature review). The design of this study is based on the focus of conceptual and thematic exploration of many research findings that are relevant to the topic of digital innovation, digital transformation, and economic development based on Society 5.0. The data sources used include international journals and conference proceedings scheduled for 2023–2025. The main purpose of the analysis is to identify similarities and differences in topics, methodologies, and research findings. Data collection techniques are carried out with the documentation method and systematic literature review using data sourced from Scopus, AI Index, OECD, ScienceDirect, and Google Scholar.

Data analysis has been carried out qualitatively thematically with the following steps: (1) identifying the main theme, (2) classifying keywords, (3) analyzing data (gap analysis), and (4) synthesizing data based on the latest research (Willig, 2008). Through the process of cross-examination and literature triangulation, the validity and reliability of the research results are evaluated. Thus, this study does not fully explore the human subject as in the principle of quantitative research (Azwar, 2007), which focuses on the academic interpretation of published works to explore a new understanding of the role of digital innovation in facilitating the implicit economic transformation in the Society 5.0 era.

RESULTS AND DISCUSSION

Systematic analysis of seven scientific articles that discuss the relationship between digital innovation and artificial intelligence (AI) in increasing sustainable competitiveness in the Society 5.0 era. Data collected from 2016–2025 from Scopus database, AI Index, OECD, Scopus, ScienceDirect, and Google Scholar. The analysis is carried out with the Systematic Literature Review (SLR) method, which follows the PRISMA stage and includes identification, screening, feasibility, and data synthesis. Of the 200 articles found, seven meet the criteria of relevance, originality, and contribution to the theme of technology and sustainability. The results of the literature review show that digital innovation and artificial intelligence play an important role in shaping sustainable competitiveness through four main dimensions: first, technology drivers; second, governance and ethics; third, strengthening human resources and digital inclusion; and fourth, future challenges and directions. The four dimensions are interconnected and form a broad conceptual framework needed for the transformation towards Society 5.0.

Table 1. Systematic Review of Selected Articles

No	Article Identification	Research Objective	Theoretical Framework	Variables & Research Method	Key Findings	Strengths & Weaknesses	Contribution to the Field	Research Gap & Relevance to the Topic
1	Banerjee, Kabadi, & Karimov (2023) – The Transformative Power of AI: Projected Impacts on the Global Economy by 2030.	To explain the projected global economic impacts of AI adoption by 2030.	Digital Economic Growth Theory (Solow, 1956; McKinsey, 2018).	Variables: AI adoption, GDP growth, employment. Method: Literature study and McKinsey data analysis.	AI is projected to increase global GDP by 16–26% (USD 13 trillion); 70% of companies are expected to adopt AI.	Strengths: Global macroeconomic data. Weaknesses: Limited discussion on social implications.	Provides an economic foundation for global AI impact.	Lacks exploration of digital inequality. Relevant to global competitiveness and AI economics.
2	Lukianenko & Simakhova (2024) – AI in the Scientific and Technological Paradigm of Global Economy.	To analyze the role of AI in transforming the paradigm of the global sustainable economy.	Sustainable Development Theory & Industry 5.0 Framework.	Variables: digital readiness across countries. Method: Kohonen self-organizing map analysis.	AI enhances efficiency and productivity but widens the digital divide between countries.	Strengths: Cross-country dataset. Weaknesses: Limited representation of developing nations.	Links AI with global sustainability and Industry 5.0 development.	Lacks discussion on social mitigation policies. Highly relevant to Society 5.0.
3	Suljić (2025) – Strategic Leadership in AI-Driven Digital Transformation.	To explain the role of strategic and ethical leadership in digital transformation.	Transformational Leadership Theory & AI Ethics Framework.	Variables: leadership, ethical AI, sustainability. Method: Qualitative case study of global consulting firms.	Visionary and ethical leadership accelerates successful digital transformation.	Strengths: High practical relevance. Weaknesses: Lacks quantitative validation.	Proposes an ethical digital leadership model.	Empirical gap in measuring AI ethics effectiveness. Relevant to digital governance and leadership.
4	Entezami et al. (2025) – AI-Based Criteria in the Development of Digital Economy.	To identify key AI-based criteria influencing the digital economy.	Digital Economy Theory (Tapscott, 1995).	Variables: 20 AI criteria. Method: Hesitant Fuzzy Best–Worst Method (HF-BWM).	Key factors: innovation investment, automation, and data-processing efficiency.	Strengths: Objective quantitative approach. Weaknesses: Expert subjectivity in weighting criteria.	Provides AI-based policy priorities for digital economy development.	Cross-country comparison not yet conducted. Relevant to global digital policy.

5	Hamdouna & Khmelyarchuk (2025) – Technological Innovations Shaping Sustainable Competitiveness.	To review technological innovations shaping long-term sustainable competitiveness.	Resource-Based View (RBV), Dynamic Capabilities, and Triple Helix Model.	Variables: innovation → competitiveness. Method: Systematic Review (PRISMA, Scopus).	Technological innovation is the primary determinant of long-term competitiveness.	Strengths: Comprehensive and systematic review. Weaknesses: Lacks empirical validation.	Provides an integrative model linking innovation and sustainability.	Limited sectoral differentiation. Relevant to global innovation research.
6	Lukianenko, Pavlovskyi, & Sydorenko (2023) – Digital Imperative for the Development of the Global Economy.	To demonstrate that digitalization is an imperative for global economic development.	Technological Globalization Theory.	Variables: digitalization, e-governance, public efficiency. Method: SWOT & cross-country analysis.	Digitalization increases efficiency and accessibility but creates social and security risks.	Strengths: Multidimensional analytical approach. Weaknesses: Limited generalizability beyond Ukraine.	Establishes the smart economy concept.	Lacks social risk mitigation strategies. Relevant to digital governance studies.
7	Wibowo (2023) – Digital Innovation in Economic Advancement of Society 5.0.	To analyze the contribution of digital innovation to human-centered economic progress.	Digital Innovation Theory (Schumpeter, 1934) & Society 5.0 Concept.	Variables: digital innovation → economic growth. Method: Qualitative literature review and secondary data.	Digital innovation enhances efficiency, inclusivity, and human well-being.	Strengths: Contextual (Indonesia-based). Weaknesses: No primary data validation.	Integrates digital innovation and Society 5.0 into inclusive economic development.	Lacks empirical evidence in the public sector. Relevant to national digital transformation.

Source: Processed by Author (2025), based on AI Index, Scopus, ScienceDirect, Google Scholar

1. Technological Drivers of Sustainable Competitiveness

The results of the literature study show that digital innovation and artificial intelligence are the main factors that drive sustainable competitiveness in today's world economy. According to Banerjee et al. (2023), cross-sector automation, energy efficiency, and increased productivity will result in an increase of between 16 and 26 percent of global GDP. Lukianenko et al. (2024) confirmed in the context of sustainable development that, by using real-time data, AI integration will increase industrial productivity and public service quality.

Digital technology and artificial intelligence also accelerate the shift towards smart economy and industry 5.0, which combines human intelligence with machine efficiency (Ramadan et al. 2025). Therefore, in facing the era of Industry 5.0, Setyanti et al. (2025) emphasize that collaboration between academic institutions, businesses, and the government is crucial to improve human capital and digital readiness. Entezami et al. (2025) emphasized that to increase a country's competitive advantage, investment in research and digital infrastructure is very important. AI can save energy up to 20% and reduce operational costs, according to the energy prediction system (Mhlanga, 2023) and industrial automation (Luo et al. 2024). However, digital readiness and national governance greatly affect the success rate of this technology adoption. Countries that have a high level of digital readiness tend to produce greater economic benefits than countries that have backward infrastructure. Therefore, technological innovation must be combined with public policy and adaptive approach that supports cross-sector cooperation and knowledge transfer.

2. Governance and Ethical Dimensions

Strong ethical governance is needed because of the dominance of AI. According to Suljic (2025), the success of digital transformation is greatly influenced by strategic leadership based on ethical values. Ethical challenges such as algorithmic bias, data privacy, and automatic decision accountability become global issues that need to be addressed thoroughly. In the era of AI supremacy, strong ethical governance is needed to minimize bias and maintain public trust in technology by ensuring algorithmic justice, accountability, and transparency (Idowu 2024). To maintain a balance between innovation and social responsibility, the development of an AI management structure is an important step. In order for the public's trust in technology to be maintained, the government and the industrial sector must ensure that the algorithms are transparent and have a public supervision mechanism. AI governance in Society 5.0 not only functions as a risk controller, but also as a tool to realize social justice and digital inclusion.

Education and research must be involved in the formation of digital ethics for future generations. So that digital transformation can take place with the principles of accountability, fairness, and transparency, AI ethics must be included in the technology education curriculum. Therefore, government serves as a moral basis for sustainable innovation and not just as an administrative regulation.

3. Human Capital and Digital Inclusion

The success of the implementation of digital innovation and AI depends heavily on the human factor. According to Lukianenko and Simakhova (2024), the equal distribution of technology benefits is still hindered by the difference in digital capabilities between countries. Wibowo (2023) stated that society 5.0 needs individuals who are flexible, innovative, and focused on lifelong learning.

Digital training and technology education must be a national priority. It is proven that countries with a focus on the development of innovation-based human resources have stronger economic competitiveness. In addition, digital inclusion also includes digital literacy and equal access to infrastructure. Technological advances can expand socio-economic disparity if not used evenly. Collaboration between the government, industry, and universities is very important to increase people's digital competence in the context of sustainable development (Aisyah 2023). This effort not only increases labor productivity, but also makes society more prepared to overcome the upcoming technological damage.

4. Challenges and Future Directions

Apart from the great benefits offered by artificial intelligence and digital innovation, there are big issues that must be considered. According to Hamdouna and Khmelyarchuk (2025), cyber security, digital inequality, and workforce disruption are the three main threats. Increasing cyber attacks put the infrastructure of the digital economy under danger, while excessive automation could replace manual work if people are not prepared to practice. To answer this problem, a multidisciplinary and collaborative approach is needed. World Economic Forum (2025) emphasizes that governments, industry, and academia must work together to ensure an inclusive digital transformation supported by strong cybersecurity, ethical governance, and digital literacy. The government must create an inclusive digital policy that emphasizes social protection and digital skills. The world of education must ensure that their digital curriculum is ready to anticipate the development of AI, while the industrial world must strengthen their data security systems and implement environmentally friendly innovations.

In the future, research must be focused on the empirical evaluation of the social impact of AI, the creation of an ethical governance model across sectors, and the measurement of the digital readiness index of developing countries. AI can be used as a catalyst for inclusive and equitable development if the public and private sectors work together.

CONCLUSION

Studies show that digital innovation and artificial intelligence (AI) are key factors that will contribute to the transition to Society 5.0. The results of a systematic study show that the integration of AI in the aspects of technology, management, and human creates a synergistic framework that can increase productivity, social responsibility, and economic growth. Sustainable competitiveness is not only due to technological advances but also by human-centered innovation and an adaptive management structure that ensures stability, accountability, and resilience in digital transformation.

This finding confirms that AI ethical governance and digital human development are equally important and technology infrastructure in realizing sustainable progress. Therefore, further research must be focused on the empirical evaluation of the socio-economic impact of AI adoption, the development of a governance sector model, and the development of special digital indicators for developing countries so that AI can become an inclusive and successful development tool that meets global goals.

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