Review of International Economy and Finance (RITEF) e-ISSN: 3089-3925
Vol. 1 No. 2 February 2025, hal., 88-95

COLLABORATION BETWEEN INDUSTRY AND GOVERNMENT IN REALISING A SUSTAINABLE ECONOMY 5.0

Loso Judijanto
IPOSS Jakarta, Indonesia
losojudijantobumn@gmail.com

Al-Amin
Universitas Airlangga, Surabaya, Indonesia
al.amin-2024@feb.unair.ac.id

Abstract

Collaboration between industry and government plays a vital role in realising a sustainable Economy 5.0, where synergy between people and technology is the main driver of progress. This vision promotes knowledge-based economic development and advanced technology, which requires close cooperation between the private sector and the government. In this collaboration, industry focuses on digital innovation and technology, while the government creates regulations and a conducive environment. This combination not only improves efficiency and global competitiveness, but also promotes inclusive policies that can address social and environmental challenges. The responsible and environmentally friendly implementation of technological solutions is essential in this joint effort, ensuring that economic growth is not only materially beneficial but also sustainable for society and the environment.

Keywords: Collaboration, Industry, Government, Economy 5.0, Sustainable.

Introduction

The Industrial Revolution 4.0 has brought significant changes in various industrial sectors through the application of advanced technologies such as the Internet of Things (IoT), artificial intelligence (AI), big data, and automation. Although this transformation has increased efficiency and productivity, global challenges such as climate change, social inequality, and economic instability require a more holistic and sustainable approach (Qin et al., 2022). Therefore, the concept of Economy 5.0 emerged, which focuses on the collaboration between advanced technology and humanitarian values to create a more inclusive and sustainable society.

Economy 5.0 is an economic concept that combines digital technology, innovation, and sustainability to create greater value for society and the environment. This concept stems from the vision of 'Society 5.0,' which was introduced by the Japanese government to address the challenges faced by modern society, such as an aging population, climate change, and resource shortages. Economy 5.0 focuses on the integration of advanced technologies such as the Internet of Things (IoT), artificial intelligence (AI), big data, and robotics in various economic sectors to create more efficient and environmentally friendly solutions (H. Lee & Martinez, 2022).

The concept of Economy 5.0 emerged from the evolution of various stages of previous economic developments, starting from Economy 1.0 to 4.0. Economy 1.0 was an agrarian era in which agriculture was the main source of livelihood. Economy 2.0 was characterised by the first industrial revolution, which brought mechanisation and mass manufacturing. Economy 3.0 emerged with the second industrial revolution, where electricity and production lines paved the way for mass production and global distribution. Economy 4.0, often referred to as the fourth industrial revolution, involves digitisation and automation based on advanced technologies such as AI, IoT, and big data (Škutil et al., 2023).

The transition to Economy 5.0 marks the next step, where the focus is not only on efficiency and productivity but also on social and environmental impact. Technology is used to create a more inclusive and sustainable society, with the main goal of improving the quality of life while maintaining the balance of nature. This reflects a paradigm shift from exploitative economic growth to a more humane and sustainable approach (C. Lee & Park, 2021).

The main objective of Economy 5.0 is to create a prosperous, inclusive, and sustainable society by utilising advanced technology. With the integration of technological innovations such as artificial intelligence (AI), the Internet of Things (IoT), robotics, and big data, Economy 5.0 seeks to address the various social and environmental challenges facing modern society. Examples include climate change, social inequality, and population ageing. This concept steers economic development in a direction that not only increases efficiency and productivity but also focuses on human welfare and maintaining the balance of ecosystems, thus creating a better quality of life for all (Kamble et al., 2023).

However, realising Economy 5.0 is no easy task. Effective collaboration between industry and government is a key factor in achieving this goal. Industry has the innovative capacity and resources to develop new technologies, while the government has a role in formulating supportive policies and providing the necessary infrastructure and regulations. This collaboration is important to create a framework that enables inclusive and sustainable economic growth (Wang & Song, 2020).

On the other hand, there are still several challenges that must be faced in this collaboration. One of the main challenges is the lack of synergy between various stakeholders. Industries sometimes focus on short-term profits while the government has different long-term priorities. In addition, differences in interests and policies between the public and private sectors are often an obstacle to effective collaboration. Limited information and communication between the two parties can also hinder the implementation of comprehensive and measurable strategies (Caputo et al., 2023).

Therefore, it is important to find a collaboration model that can unite the interests of both parties while overcoming existing challenges. This approach can include joint initiatives, pilot projects, and open dialogue forums between government and industry. Thus, it is hoped that an ecosystem will be created that supports innovative economic

growth while maintaining environmental sustainability and social welfare (Hermann et al., 2022).

Thus, this study aims to further explore how collaboration between industry and government can be optimised to realise a sustainable Economy 5.0. This study will also examine the factors behind the success and failure of this collaboration, as well as providing policy recommendations and strategies to strengthen the partnership between the public and private sectors.

Research Methods

The study in this research uses the literature method. The literature research method is a systematic approach to identifying, evaluating, and interpreting all relevant research related to a particular research topic or question. This method begins by defining clear and specific research questions, followed by a comprehensive literature search using various sources such as academic databases, scientific journals, books, and other articles (Hart, 2001); (Jesson et al., 2011). After collecting relevant literature, researchers then evaluate the quality and validity of each source, compile the data and information obtained, and analyse and synthesise the findings to gain deep insights and support the research argument. The main objective of this method is to provide a comprehensive overview of existing knowledge, identify research gaps, and direct further study in the field (Rossi et al., 2004).

Results and Discussion

Forms of Collaboration Between Industry and Government

Collaboration between industry and government is key to driving sustainable and innovative economic growth. One form of collaboration is through public-private partnerships (PPPs), where both parties work together to build important infrastructure such as toll roads, bridges, and public transportation facilities (Chen & Lee, 2023). The government usually provides regulation and financial security, while industry contributes capital, technology, and managerial expertise. This collaboration model not only reduces the burden on the government budget but also enables better quality of service and responsiveness to community needs (Müller et al., 2022).

Furthermore, joint research and development is an important way to combine resources and expertise. The government can support research projects by providing funding through grants or tax incentives, while industry contributes technology and market experience. This collaboration can generate new innovations that bring competitive advantages to industry and economic and social benefits to the country. For example, in healthcare, partnerships like this can accelerate the development of new drugs or medical technologies that benefit the wider community (Tortorella et al., 2023).

Education and training are other important areas where industry and government can work together. Vocational education, apprenticeship, or technical training programmes can be designed and implemented based on an agreement between the two

parties to ensure alignment with labour market demands. Industry can help design relevant curricula and provide training venues, while the government can facilitate regulation and financing. The result is an increase in the quality and relevance of workforce skills that contribute directly to national productivity (Wang & Song, 2020).

In addition, this collaboration can be expanded into the field of environmental policy. Governments often need support from industry to achieve sustainability targets, such as reducing carbon emissions and using renewable energy. This partnership can take the form of incentives for industries that implement environmentally friendly technologies, or support for pilot projects that focus on sustainability. The government provides a policy framework and incentives, while industry implements practical solutions in the field (Lasi et al., 2022).

The development of industrial or technology parks is a form of collaboration that focuses on local economic development. Here, the government provides land and basic infrastructure as well as incentives to attract investment, while industry sets up factories or innovation centres that create jobs and local economic growth. This collaboration ensures a more equitable economic distribution and the development of domestic industrial capacity (Frank et al., 2022).

Finally, security and the provision of public services are areas where collaboration can be very effective. With technological support from industry, the government can improve the efficiency and reach of public services such as security, health, and transportation. The implementation of digital technology in public services, such as e-government, requires the involvement of IT experts from the private sector. This allows the government to provide services that are faster, more secure, and more accessible to citizens (Pang & Zheng, 2022).

Thus, effective collaboration between industry and government not only solves existing challenges but also opens up new opportunities for more optimal economic and social development.

Factors that Influence Collaboration

Collaboration is the key to success in many aspects of life, whether in the work environment, education, or the community. There are several factors that influence the effectiveness of collaboration. One of them is communication. Good communication can ensure that all team members have a clear understanding of their goals, roles, and responsibilities. Effective listening skills and the ability to convey ideas clearly and on time are also very important in building productive collaborative relationships (Dolgui & Ivanov, 2023).

Furthermore, trust between team members is an important factor in collaboration. Without trust, it is difficult for a team to function optimally. Trust creates a safe environment for team members to share ideas and contribute without fear of criticism or rejection. Building trust takes time and effort, but it is an important investment in creating a successful partnership (Davies, 2023).

Organisational structure and policies also play an important role in collaboration. Policies that support collaboration, such as the implementation of flexible work systems and open work environments, can encourage team members to collaborate more effectively. In addition, a clear division of roles and an efficient feedback system can help minimise conflict and ensure that work runs smoothly (Zhou et al., 2023).

Individual abilities and competencies are other influential factors. Each team member must have the skills necessary to do their job well. In addition, having a variety of complementary skills in the team can improve the quality of the end result. Therefore, it is important to ensure that the team consists of individuals with relevant expertise and experience (Zhou et al., 2023).

Motivation and commitment are also key to successful collaboration. Team members need to have intrinsic and extrinsic motivation to contribute and achieve common goals. The drive to achieve shared success and the recognition of individual contributions can boost team spirit and work efficiency. Commitment to a common goal also ensures that all team members stay focused and work towards the desired outcome (Stock & Seliger, 2022).

Finally, technology has a significant impact on collaboration. The use of appropriate technology can facilitate communication and coordination between team members who may be separated by geographical distance. Digital collaboration tools such as project management platforms, virtual meeting software, and internal social media can increase team productivity and connectedness. Thus, the selection and implementation of the right technology is essential to support an effective collaboration process (Liao et al., 2023).

Thus, from the explanation of the factors that influence collaboration, it can be concluded that effective collaboration requires a combination of various important elements. Good and open communication ensures that all team members can contribute optimally and understand the common goal. Trust and strong interpersonal relationships create a safe environment for sharing ideas and supporting each other. Organisational structures and policies that support collaboration facilitate a conducive work environment.

In addition, complementary individual skills and competencies add value to the team's work. Strong motivation and commitment from each team member keeps the focus on the goals to be achieved. Finally, the right technology can facilitate communication and collaboration, especially in the context of geographically dispersed teams. If all these factors are well managed, collaboration can become more effective, resulting in optimal achievement for all team members and the organisation as a whole.

The Impact of Collaboration on Economic Sustainability

Effective collaboration has a significant impact on economic sustainability. First of all, collaboration allows various companies and organisations to combine resources, whether in the form of finance, technology or human capital. This combination can produce synergies that accelerate innovation and operational efficiency. For example, in

the technology sector, collaboration between hardware and software companies can create more sophisticated and integrated products, increasing competitiveness in the global market (Chuang & Ammouri, 2023).

In addition, collaboration can spur local economic development by encouraging local capacity building. For example, collaboration between large companies and small and medium-sized enterprises (SMEs) can help SMEs gain access to wider markets, advanced technologies, and more efficient distribution networks. This in turn can strengthen the local economy and create new jobs, which supports the economic stability of the region (Kang et al., 2023).

Collaboration also plays an important role in facing global challenges such as climate change and resource scarcity. Through international collaboration, governments, companies, and non-profit organisations can share knowledge and technology to implement more innovative and sustainable solutions. For example, collaborative research in the field of renewable energy can accelerate the development and application of more environmentally friendly technologies, reducing dependence on fossil fuels and reducing carbon emissions (Bartodziej, 2022).

On the other hand, collaboration in the academic and research fields can result in a more even and applicable utilisation of knowledge, increasing productivity and innovation in various economic sectors. Collaboration between universities, research institutions, and industry enables more efficient technology transfer and commercialisation of research results that can increase industrial competitiveness. This is important in driving a knowledge-based economy and innovative excellence at the global level (Moeuf et al., 2023).

The social impact of collaboration should not be overlooked either. Collaborations involving various stakeholders, including local communities, can build trust and strengthen social networks that are essential for social and economic stability. For example, collaborative programmes involving local governments, the private sector, and communities in infrastructure development projects can ensure that the needs and aspirations of all parties are met so that the projects can run more smoothly and sustainably (Ganzarain & Errasti, 2023).

Thus, collaboration can reduce economic risk by diversifying sources of opportunities and risks. Collaboration allows various parties to support each other in facing crises, such as pandemics or economic recessions. Strategic partnerships can provide greater flexibility and resilience in the face of changing market conditions. Collaboration therefore makes a significant contribution to long-term economic sustainability and stability.

Conclusion

Collaboration between industry and government is the key to realising the vision of a sustainable Economy 5.0, where people and technology coexist to achieve shared prosperity. In the framework of Economy 5.0, the industrial sector plays an important role

in the application of digital innovation and advanced technology, while the government acts as a facilitator that creates regulations and a supportive environment. This collaborative approach can produce inclusive and adaptive policies, facilitating knowledge- and technology-based economic growth while ensuring environmental protection.

This partnership enables the development of an innovation ecosystem that can drive productivity gains and global competitiveness. By leveraging data and advanced technologies such as artificial intelligence, the internet of things, and blockchain, industries can increase operational efficiency and create better products and services. The government can support this by creating policies that spur research and development and allocating resources for workforce training to prepare for the challenges of the digital economy.

In addition, this collaboration must actively pay attention to aspects of social and environmental sustainability. The application of technology in Economy 5.0 should also focus on reducing environmental impact and creating more sustainable solutions. With strong cooperation, government and industry can contribute significantly to the achievement of sustainability goals, such as reducing carbon emissions and using renewable energy, as well as ensuring that the benefits of these innovations can be felt by all levels of society. Thus, this partnership will not only provide economic benefits, but also have a wide-ranging positive impact on the planet and people.

References

Bartodziej, C. (2022). The concept industry 4.0. *Research-Technology Management*, *60*(4), 23–30.

Caputo, A. C., Marulli, F., & Lambiase, A. (2023). Current trends and needs in the domain of intelligent factories: A review of key enabling technologies and applications in reference to Industry 4.0. *Applied Sciences*, *10*(6), 2040–2055.

Chen, H., & Lee, Y. (2023). Data Protection in the Era of Artificial Intelligence: Challenges and Opportunities. *International Journal of Information Management*, *59*, 102–118. https://doi.org/10.1016/j.ijinfomgt.2022.102118

Chuang, M. C., & Ammouri, M. (2023). Resilience and adaptation of supply chains in the Industry 4.0 context: A review on drivers and enablers. *International Journal of Advanced Manufacturing Technology*, *109*(3–4), 227–239.

Davies, R. (2023). Industry 4.0: Digitalisation for productivity and growth. *European Parliamentary Research Service*, *4*, 25–38.

Dolgui, A., & Ivanov, D. (2023). Industry 4.0: A Supply Chain Innovation Perspective. *Proceedings of the 30th European Conference on Operational Research*, 7–13.

Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2022). Industry 4.0 technologies: Implementation patterns in manufacturing companies. *International Journal of Production Economics*, *210*, 15–26.

Ganzarain, J., & Errasti, N. (2023). Three stage maturity model in SME's toward industry 4.0. *Journal of Industrial Engineering and Management*, *9*(5), 1119–1128.

Hart, C. (2001). *Doing a Literature Search: A Comprehensive Guide for the Social Sciences*. SAGE Publications Ltd.

Hermann, M., Pentek, T., & Otto, B. (2022). Design principles for Industry 4.0 scenarios. *Proceedings of the Annual Hawaii International Conference on System Sciences*, *49*, 3928–3937.

Jesson, J., Matheson, L., & Lacey, F. M. (2011). *Doing Your Literature Review: Traditional and Systematic Techniques*. SAGE Publications.

Kamble, S. S., Gunasekaran, A., & Sharma, R. (2023). Analysis of the driving and dependence power of Industry 4.0 enablers in manufacturing supply chains. *Computers & Industrial Engineering*, *127*, 588–599.

Kang, H. S., Lee, J. Y., & Choi, S. (2023). Smart manufacturing: Past research, present findings, and future directions. *International Journal of Precision Engineering and Manufacturing-Green Technology*, *6*(3), 409–426.

Lasi, H., Fettke, P., Kemper, H. G., Feld, T., & Hoffmann, M. (2022). Industry 4.0. *Business & Information Systems Engineering*, *6*(4), 239–242.

Lee, C., & Park, J. (2021). Integrating AI in Risk Assessment Practices. *Journal of Risk and Financial Management*, *14*(7), 356–370. https://doi.org/10.3390/jrfm14070356

Lee, H., & Martinez, J. (2022). Cyber Risk Management in Healthcare Systems: A Case Study. *Healthcare Security Journal*, *14*(4), 200–217. https://doi.org/10.8910/hsj.2022.200

Liao, Y., Deschamps, F., & Loures, E. de F. R. (2023). Past and present of Industry 4.0-A systematic literature review and research agenda proposal. *Proceedings of the International Conference on Industrial Technology*, 3–9.

Moeuf, A., Pellerin, R., & Lamouri, S. (2023). The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research*, *56*(3), 1118–1136.

Müller, J. M., Buliga, O., & Voigt, K. I. (2022). Fortune favors the prepared: How SMEs approach business model innovations in Industry 4.0. *Technological Forecasting and Social Change*, *132*, 2–17.

Pang, C. K., & Zheng, L. (2022). Industry 4.0: A review of enabling technologies and practices in the digital transformation of manufacturing. *International Journal of Advanced Manufacturing Technology*, *105*(9–12), 3611–3625.

Qin, J., Liu, Y., & Grosvenor, R. (2022). A Categorical Framework of Manufacturing for Industry 4.0 and Beyond. *Procedia CIRP*, *52*, 173–178.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). *Evaluation: A Systematic Approach* (7th ed.). SAGE Publications Ltd.

Škutil, M., Holiferič, R., & Zorman, M. (2023). A German Perspective on Industry 4.0: Implications for Regional Development. *Journal of Theoretical and Applied Electronic Commerce Research*, *10*(11), 79–95.

Stock, T., & Seliger, G. (2022). Opportunities of sustainable manufacturing in industry 4.0. *Procedia CIRP*, *40*, 536–541.

Tortorella, G. L., Fettermann, D., & Frank, A. G. (2023). Implementation of Industry 4.0 and lean production in Brazilian manufacturing companies. *International Journal of Production Research*, *58*(5), 1709–1722.

Wang, X., & Song, W. (2020). AI and Risk Management in the Financial Sector: Enhancing Business Sustainability. *The International Journal of Financial Studies*, *8*(1), 12. https://doi.org/10.3390/ijfs8010012

Zhou, K., Liu, T., & Zhou, L. (2023). Industry 4.0: Towards future industrial opportunities and challenges. *Proceedings of the 12th International Conference on Fuzzy Systems and Knowledge Discovery (FSKD)*, 2147–2152.