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Entrepreneurship in Society 5.0: integrating technology and humanistic values for a sustainable future

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***Abstract**: Industry 4.0 brings digitization and automation, increasing efficiency, but causing job loss. Industry 5.0 integrates people and machines to overcome these limitations. Entrepreneurship in Society 4.0 is shaped by digital technologies, while Entrepreneurship in Society 5.0 emphasizes the balance of technology and humanistic values. The adoption of Industry and Society 5.0 is growing, requiring further development of infrastructure and education. The focus of this paper is the analysis of the concept of entrepreneurship 5.0 in society 5.0 and the development of a theoretical model for the improvement of entrepreneurship.*

***Keywords**: Industry 4.0, Industry 5.0, entrepreneurship, Society 4.0, Society 5.0*

Preduzetništvo u Društvu 5.0: integracija tehnologije i humanističkih vrednosti za održivu budućnost

***Apstrakt**: Industrija 4.0 donosi digitalizaciju i automatizaciju, povećavajući efikasnost, ali izaziva gubitak radnih mesta. Industrija 5.0 integriše ljude i mašine da prevaziđe ova ograničenja. Preduzetništvo u Društvu 4.0 je*

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oblikovano digitalnim tehnologijama, dok Preduzetništvo u Društvu 5.0 naglašava ravnotežu tehnologije i humanističkih vrednosti. Prihvatanje Industrije i Društva 5.0 raste, zahtevajući dalji razvoj infrastrukture i obrazovanja. Fokus ovog rada je analiza koncepta preduzetništva 5.0 u Društvu 5.0 i razvoj teorijskog modela za unapređenje preduzetnitšva.

***Ključne reči**: Idustrija 4.0, Industrija 5.0, preduzetništvo, Društvo 4.0, Društvo 5.0*

1. Introduction

As the world continues to evolve through technological advancements, the landscape of the global economy is also undergoing significant transformations (Papanastassiou et al., 2020; Rotatori et al., 2021). These advancements have substantially shaped the way business is conducted, goods and services are produced and distributed, and work is organized. Particularly notable are the Fourth and Fifth Industrial Revolutions, known as Industry 4.0 (4IR) and Industry 5.0 (5IR), which have laid the foundation for numerous technological innovations that transform the global economy (Johri et al., 2021; Saniuk et al., 2022).

Over the past few years, changes spurred by these revolutions have encompassed various sectors, including manufacturing, logistics, healthcare, and retail (Fatima et al., 2022; Mourtzis et al., 2022; Xu et al., 2021). They have brought not only challenges but also tremendous opportunities for organizations capable of adapting and harnessing these new technologies. In the context of entrepreneurship, Industries 4.0 and 5.0 have enabled the creation of new business models and approaches characterized by a high degree of digitalization and integration between humans and machine (Paschek et al., 2019; Permatasari & Iqbal, 2022).

In light of these changes, conceptual frameworks, known as Entrepreneurship in Society 4.0 and 5.0, have emerged. These frameworks illuminate how entrepreneurs adapt their business strategies and operations in line with the new industrial landscape. The situation in Serbia, a country that has undergone significant transformations in the industrial and entrepreneurial sectors in response to technological advancements, is particularly relevant (Kolaro et al., 2023).

Every step in industrial evolution brings new changes, not only in how business is conducted but also in how society functions. As the world progresses from Industry 4.0 to Industry 5.0, we see a transition from highly digitized, automated systems to an approach that encourages greater interaction and harmony

between humans and machines (Zizic et al., 2022). This approach supports human inventiveness, creativity, and ethical values, providing balance with technological innovations.

Parallel to this evolution of the industry, the entrepreneurial landscape is also transforming. Entrepreneurship in Society 4.0 reflects business strategies deeply rooted in digital technology and leveraging automation to enhance efficiency and productivity. In contrast, Entrepreneurship in Society 5.0 strives for technology integration with human capabilities, emphasizing creativity, innovation, and the humanization of technology.

This paper provides an overview of Industry 4.0 and 5.0, as well as Entrepreneurship in Society 4.0 and 5.0, focusing on their differences and implications. The importance of human creativity, leadership, empathy, and ethical business practices, alongside technological skills, is highlighted to achieve a balanced and sustainable industrial and entrepreneurial future. A model for advancing entrepreneurship from traditional to Entrepreneurship 5.0 is presented from the perspective of Society 5.0.

The need for a comprehensive approach encompassing political strategies, educational reforms, and collaboration among different societal sectors is emphasized to successfully overcome challenges and leverage the advantages of the new era. The research question guiding this paper is:

What factors and concepts characterize Entrepreneurship 5.0 in Society 5.0, and how can entrepreneurship be improved?

2. Industry 4.0 and 5.0

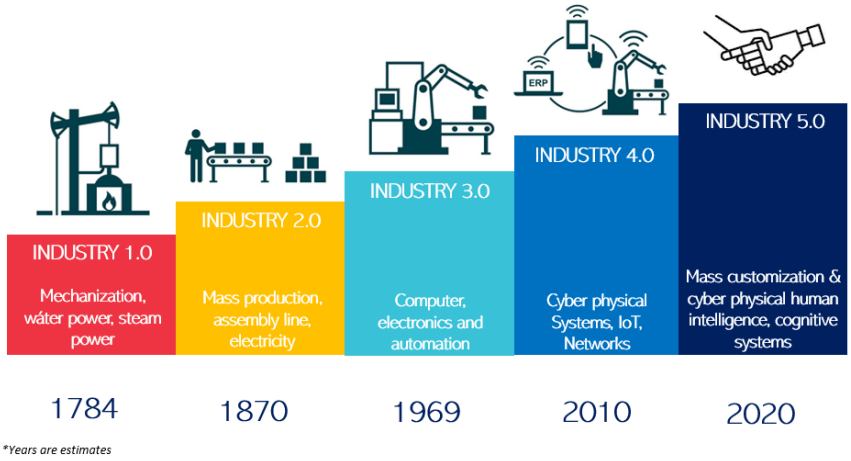
The onset of the 21st century was marked by the advent of Industry 4.0, which ignited a revolution in the form of digitalization and automation of industrial processes. This movement, also known as the Fourth Industrial Revolution, ushered in astounding technological innovations, including the Internet of Things (IoT), autonomous robotics, artificial intelligence (AI), big data analytics, and more (Munirathinam, 2020; Tsaramirsis et al., 2022). These technologies profoundly impacted the production, distribution, and consumption of goods and services, also prompting a radical reassessment and reconfiguration of traditional business models, giving rise to the concept of Entrepreneurship 4.0.

Industry 4.0 radically changed how we work, communicate, and consume. It brought high efficiency and productivity to industrial operations through digital integration and automation, enabling precision, speed, and optimal resource utilization. However, this era also highlighted the limitations of strict automation

and digitalization - a lack of flexibility, creativity, and human touch in processes and solutions, as well as heavy dependence on machines (Müller, 2019).

On the other hand, Industry 5.0 represents an evolution of Industry 4.0 concept, with a focus on increased interaction and collaboration between humans and machines (Figure 1). This phase provides a new paradigm where the technological advances of Industry 4.0 are integrated with human qualities such as adaptability, creativity, and ethical reasoning. The aim is to overcome the limitations of strict automation and establish a balanced industrial ecosystem where technological progress and the human factor are perfectly synchronized (Raja Santhi & Muthuswamy, 2023).

Figure 1. Industry 1.0 to 5.0



Source: (Orellana, 2020)

Industry 5.0 is slowly but surely gaining more acceptance. This revolution, which uses technological principles identical to those of Industry 4.0, does not place profit as the primary and sole driver of business but further emphasizes the importance of sustainable development (Bakator et al., 2023). It, therefore, offers a more thoughtful and holistic approach to production. It aims to provide personalized products and services that reflect the specific needs and desires of users rather than just mass production. Moreover, there is a strong focus on sustainability, social responsibility, and environmental sensitivity, all in the pursuit of building a better and sustainable future. Table 1 presents the similarities and differences between Industry 4.0 and 5.0.

Table 1. Similarities and differences of Industry 4.0 and Industry 5.0

Similarities	
Technological basis	Both concepts are based on advanced technologies, including automation, artificial intelligence (AI), Internet of Things (IoT), big data and machine learning
Digitization	Both Industry 4.0 and Industry 5.0 use digital technologies to improve production processes and efficiency
Real-time analytics	Both industries use real-time analytics to better understand and optimize manufacturing processes
Connectivity	Both strive for a greater degree of connectivity, be it connectivity between different machines, systems, products or people
Differences	
Focus on people	While Industry 4.0 is focused on the full automation and optimization of production with the help of machines, Industry 5.0 focuses on the balance between people and machines, with the aim of optimizing the interaction and cooperation between them
Sustainability	Although both concepts strive for greater efficiency, Industry 5.0 goes one step further and emphasizes the need for sustainable and environmentally friendly solutions
Values	Industry 4.0 is mainly driven by profit, while Industry 5.0 emphasizes humanistic values and strives to create "a society where people can feel fulfilled"
Assumption	Industry 5.0 emphasizes adapting the workplace to the individual needs of workers, while Industry 4.0 has a greater focus on automation and efficiency of the system as a whole

Although both Industry 4.0 and 5.0 rely on digital technologies, the differences in their approaches are significant. While Industry 4.0 focused mainly on automating repetitive tasks, Industry 5.0 strives to integrate human intuition and artificial intelligence. In Industry 5.0, human creativity, intuition, and ethical reasoning are combined with machine precision and powerful computational data processing. This integrative approach has the potential to create an industrial landscape that is not only efficient but also deeply respectful of human values and dignity, thereby achieving genuinely human-centric production (Lachvajderová & Kadarova, 2023; Nahavandi, 2019).

2.1. Society in the context of Industrial Revolutions

Throughout history, human society has experienced growth and evolution, transitioning through various stages, each representing significant shifts

brought on by technological advancements and productivity. From hunter-gatherer societies to our current information society, these stages have seen exponential population growth and economic progress. However, these advancements have also introduced complex social challenges that need addressing. Stages of societal development:

- Hunter-gatherer Society - Society 1.0 - marks the onset of humanity's development, where survival hinged on hunting and gathering food. Even in these primal conditions, the seeds of entrepreneurship were present in the form of innovative hunting strategies and tools.
- Agrarian Society - Society 2.0 - represents a notable shift to agriculture and the beginning of settled communities, cultivating crops primarily for sustenance. This period saw the early entrepreneurs who managed and expanded their farmlands and traded their surplus produce.
- Industrial Society - Society 3.0 - denoting the era of industrialization, urbanization, and the advent of modern economies. Entrepreneurs of this era understood the power of industry and technology and successfully established businesses that drove economic growth.
- Information Society - Society 4.0 - a period characterized by digitalization and automation driven by advancements in information technology. This era centers around efficiency, productivity, and economic growth but introduces new challenges, including data security concerns, the digital divide, and employment displacement due to automation. Entrepreneurship in this era became more dynamic and global, with startups using new technology platforms to deliver innovative products and services while also grappling with new challenges such as data security concerns, the digital divide, and employment displacement due to automation.

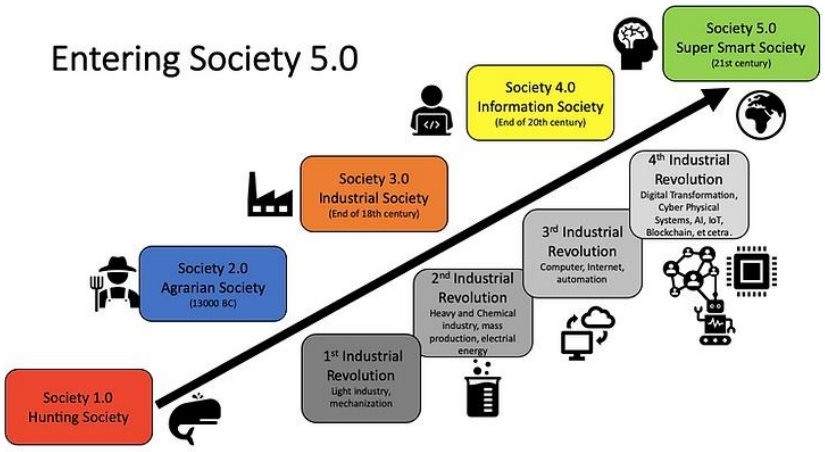
As we navigate the Information Society, we stand on the precipice of the next major societal transformation - Society 5.0. This concept, which runs parallel to the Fourth Industrial Revolution and extends towards the upcoming Fifth Industrial Revolution, originates in Japan (Gladden, 2019). Society 5.0 proposes an advanced integration of cybernetic and physical systems to construct a human-centered societal model. It aims to harmonize economic progress with the resolution of various social issues (Stanojčić et al., 2022).

Society 5.0 takes the digital transformation of Society 4.0 a step further by integrating cyber and physical spaces to enhance the quality of life for all. This marks a departure from focusing solely on economic growth to balancing prosperity, social justice, and environmental sustainability (Huang et al., 2022; Kumorotomo, 2020; Serpa & Ferreira, 2018). The essence of Society 5.0 is to see technology not merely as a driver of economic growth but as a solution

provider for societal issues, including inequality, environmental problems, and the challenges posed by an aging population.

The vision of Society 5.0 emphasizes a harmonious coexistence of technological innovation and human needs and values, resulting in a society where technology serves humanity (Holroyd, 2022; Mourtzis et al., 2022). Achieving this ambitious vision demands a collective effort, ethical considerations, and a strong focus on human skills alongside technological advancements, indicating the need for collaboration among all sectors of society. Figure 2 provides a visual elucidation of societal evolution across the various industrial revolutions, capturing the intertwined progression of social structures and technological transformations.

Figure 2. Society and the Industrial Revolution



Source: (Lammers, 2019)

3. Entrepreneurship in Societies 4.0 and 5.0

The Fourth Industrial Revolution ushered in a new era of entrepreneurship (Ćoćkalo et al., 2021). During this period, entrepreneurship was transformed through digital technologies that enabled businesses to launch and grow in previously unimaginable ways. This new breed of entrepreneurship often unfolded without physical locations or traditional infrastructure. Entrepreneurs rely on virtual platforms, digital services, online marketplaces, social media, and digital marketing strategies to conduct business operations and interact with customers (Chalmers et al., 2021).

Entrepreneurship in Society 4.0 also implied a significant change in the way businesses managed and utilized data. Large amounts of information were now accessible to entrepreneurs, who could use big data analytics and artificial intelligence to understand markets better, predict trends, and make informed decisions (Amoako et al., 2021). However, despite all these technological advancements, a human touch was required to shape creative and innovative products and services that could satisfy increasingly demanding customers (Tiwari et al., 2022; Trimi & Berbegal-Mirabent, 2012).

As an evolution of Entrepreneurship in Society 4.0, Entrepreneurship in Society 5.0 emerges, representing a new paradigm in the entrepreneurial sphere. Entrepreneurship in Society 5.0 strives to integrate technological innovations with humanistic values and considerations (Carayannis & Morawska-Jancelewicz, 2022; Önday, 2019). This phase does not merely highlight technological power as the foundation for business success. On the contrary, it advocates that true business success stems from a delicate balance between technological expertise and human skills.

Today's entrepreneurship emphasizes creativity, leadership, empathy, adaptability, and ethical business conduct, alongside technological skills. This approach recognizes the value of human talents and skills in shaping business solutions that are not only technologically advanced but also creative, sustainable, and socially responsible (Ramadani et al., 2022). It offers a new perspective on the role of entrepreneurs, where they are not just businesspeople but also innovators, leaders, ethical entrepreneurs, and change agents (Carayannis & Morawska-Jancelewicz, 2022). This is crucial for creating sustainable entrepreneurial models that not only leverage technology but also support social well-being and sustainability.

In addition, it also recognizes the importance of personalized products and services. Entrepreneurs now strive to provide unique solutions that meet the specific needs and desires of individual customers (Kotler et al., 2021). This focus on personalization is possible thanks to technological advancements but also requires a deeper understanding and empathy towards consumers.

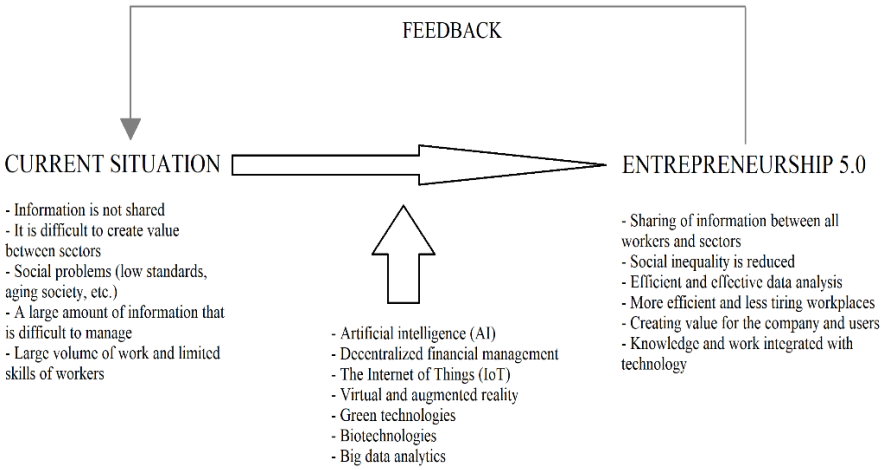
Table 2 provides a comparative analysis of Entrepreneurship in Societies 4.0 and 5.00.

Table 2. Comparative analysis of Entrepreneurship in Society 4.0 and 5.0

Entrepreneurship		
	Society 4.0	Society 5.0
Business strategy	Focus on technological innovation, automation and process efficiency	Focus on balancing technological advancement with social benefits, including sustainability, inclusivity, and quality of life
Organizational structure	Hierarchical structures with clear lines of authority	More equitable, decentralized structures that allow for greater flexibility, adaptability, and employee involvement
Role of workers	Workers are seen as operators who implement technology-driven processes	Workers are seen as key collaborators who bring unique human value that cannot be automated, such as creativity, intuition, and emotional intelligence
Customer relations	Focus on mass personalization through large amounts of data and analytics	Stronger focus on humanizing customer relations and creating authentic connections with them
Innovation	Innovation is mainly technological and focused on improving existing processes and products	Innovation is broadly understood and includes social innovations, changes in organizational culture, new work and collaboration models, as well as new ways of engaging with society and the environment
Measurement of success	Focused on quantitative indicators of success, such as profit, ROI, market share growth	Introduces qualitative indicators of success, such as social impact, sustainability, employee and customer satisfaction, and contribution to the community

The model for enhancing entrepreneurship and the path towards Entrepreneurship 5.0 in the context of Society 5.0 is shown in Figure 3. The model takes into account previous research in this domain.

Figure 3. Model for Entrepreneurship Improvement



In essence, Entrepreneurship in Societies 4.0 and 5.0 represent two key steps in the evolution of entrepreneurship that reflect the technological and societal changes shaping our world. Their development reminds us that, regardless of the pace of technological progress, the human element remains of vital importance for creating sustainable and successful enterprises (Neumann et al., 2021; Sgarbossa et al., 2020).

4. Industry and Society 5.0 in Serbia

As the global industrial landscape transitions towards Industry 5.0, a similar trend can be observed in Serbia (Vukmirović et al., 2023). This new industrial paradigm, which embodies the harmony between technological advancement and humanistic values, has begun to influence the way businesses are organized and operate. In addition to this, the concept of Entrepreneurship in Society 5.0, focusing on the balance between technology and human skills, is also gaining more recognition.

In Europe, support for Industry and Society 5.0 is provided through numerous initiatives and policies that promote digital transformation, innovation, and sustainability. For instance, the European Commission has introduced a range of policies aimed at enhancing the digital economy and society, including action plans for artificial intelligence and digital skills (Borowiecki et al., 2021; Grigorescu et al., 2021). These policies are designed to create a favorable

environment for the development and application of advanced digital technologies while simultaneously ensuring that technological progress supports social well-being and sustainability.

In Serbia, the adoption of Industry and Society 5.0 is also on the rise, but in a different way. Serbia has seen growth in digital entrepreneurship, particularly in the startup ecosystem (Djordjevic & Mihic, 2022; Pitić et al., 2020). Traditional businesses, too, are increasingly utilizing digital tools and technologies in all aspects of their operations (Ilic & Stankovic, 2023). A significant part of this process is STEM education - Science, Technology, Engineering, and Mathematics, which has become a priority to prepare the workforce for future industrial changes (González-Pérez & Ramírez-Montoya, 2022).

However, the transition to Industry and Society 5.0 in Serbia is not without challenges. Significant barriers include limited access to financing, underdeveloped digital infrastructure, and lack of required skills and expertise, as well as entrepreneurial education (Krivokuća et al., 2021). Moreover, it is essential that political strategies and regulations support this transition (Djordjević et al., 2023).

Despite these challenges, the benefits brought by the transition to Industry and Society 5.0 are enormous. These include improved efficiency, productivity, and innovation of businesses, as well as the creation of new business models and opportunities for growth. Shifting focus towards humanistic values and sustainability can lead to the creation of companies that are not only economically successful but also contribute to social welfare and environmental preservation (Pavez et al., 2021). For these reasons, the transition to Industry and Society 5.0 in Serbia remains an important step towards a sustainable and inclusive future.

5. Discussion

The transition from Industry 4.0 to Industry 5.0 and from Entrepreneurship in Society 4.0 to 5.0 marks a turning point in humankind's industrial and economic history. These changes not only impact the business landscape but also profoundly influence our understanding of work, economic growth, and even societal values.

Industry 4.0 is characterized by digitalization and automation, leading to significant improvements in efficiency and productivity. However, this progress has given rise to new challenges. There are fears that automation will replace many traditional jobs, leaving a large number of people unemployed. This raises the question of how the workforce should adapt to this new industrial

environment. In addition, while digital technology enables better connectivity and efficiency, it also creates concerns about privacy and data security. These issues instigate ethical and regulatory challenges that society still needs to address.

On the other hand, Industry 5.0 offers a vision of the future where humans and machines work together, harmonizing technological advancement with humanistic values. However, realizing this vision requires strategic planning and thought. It necessitates systematic efforts in education and training to prepare the workforce for new roles that will need to engage with sophisticated technologies and ever-evolving job requirements. A similar dynamic is unfolding in the world of entrepreneurship. Entrepreneurship in Society 4.0 was characterized by digital companies using the internet and technologies to drive growth. However, these new business models have also brought new challenges, including the issue of accessibility to digital infrastructure and digital literacy, as well as data security and privacy concerns.

Entrepreneurship in Society 5.0 offers the potential for a balance between technological prowess and humanistic values. However, to make this new paradigm a reality, it is essential to create an ecosystem that allows for integration and harmony between technology and human skills. This requires thoughtful policy-making, educational reforms, and increased collaboration between different sectors of society.

Based on the presented model, we can answer the research question: What factors and concepts characterize Entrepreneurship 5.0 in Society 5.0, and how can entrepreneurship be improved?

The application of modern technologies is imperative, with a focus on creating value for the user while simultaneously preserving and positioning the human as the primary driver of that value creation. New technologies should not replace humans but rather make their work easier and more efficient. Some of the modern technologies shaping Entrepreneurship 5.0 include artificial intelligence, big data analytics, the Internet of Things, robotics, automation, cybersecurity, cloud computing, green technologies, and biotechnologies.

In conclusion, the transition from Industry 4.0 to 5.0 and from Entrepreneurship in Society 4.0 to 5.0 will not be easy. But, despite the challenges, this transition offers the opportunity to create a society where technological advancement serves not only economic growth but also social peace and sustainability. To achieve this, long-term strategic planning is required, along with collective efforts from all parts of society.

6. Conclusion

The era of Industry 4.0 and 5.0 and the transition from Society 4.0 to 5.0 bring with them significant changes, both for the economic structure and for the social context on a global level. The challenges these changes bring are diverse, ranging from ethical and ecological to social and economic. In this sense, it is crucial that, in embracing these new trends, consideration is given to their comprehensive impact on society as a whole.

In the context of Serbia, despite the challenges, progress is recognized in the acceptance of these trends. The growth of the digital entrepreneurial ecosystem and a focus on STEM education signals an optimistic path toward successful integration into this new industrial era. However, further efforts are still needed in developing digital infrastructure, access to financing, as well as education and acquisition of necessary skills and expertise. As the world continues to transform under the influence of Industry 4.0 and 5.0, it is important to consider the complexity of these changes. This implies that decision-makers, educators, entrepreneurs, and society as a whole must take into account not only economic aspects but also the social, ethical, and ecological implications of this new industrial revolution.

This paper provides an overview of the basic aspects. However, to fully understand this complex and far-reaching topic, much deeper and more detailed research needs to be conducted. Future research would involve detailed empirical evidence, case studies, and a deep understanding of the socioeconomic implications of these industrial and entrepreneurial trends. In the end, continuous learning, adaptation, and collaboration of all sectors of society are required to navigate this industrial transformation successfully.

References

Amoako, G., Omari, P., Kumi, D. K., Agbemabiase, G. C., & Asamoah, G. (2021). Conceptual Framework—Artificial Intelligence and Better Entrepreneurial Decision-Making: The Influence of Customer Preference, Industry Benchmark, and Employee Involvement in an Emerging Market. Journal of Risk and Financial Management, 14(12), 604. https://doi.org/10.3390/jrfm14120604

Bakator, M., Cockalo, D., Kavalić, M., Terek Stojanović, E., & Gluvakov, V. (2023). An Application of Statistical Methods in Data Mining Techniques to Predict ICT Implementation of Enterprises. Applied Sciences, 13(6), 4055. https://doi.org/10.3390/app13064055

Borowiecki, R., Siuta-Tokarska, B., Maroń, J., Suder, M., Thier, A., & Żmija, K. (2021). Developing Digital Economy and Society in the Light of the Issue of Digital

Convergence of the Markets in the European Union Countries. Energies, 14(9), 2717. https://doi.org/10.3390/en14092717
Carayannis, E. G., & Morawska-Jancelewicz, J. (2022). The Futures of Europe: Society 5.0 and Industry 5.0 as Driving Forces of Future Universities. Journal of the Knowledge Economy, 13(4), 3445–3471. https://doi.org/10.1007/s13132-021-00854-2
Chalmers, D., MacKenzie, N. G., & Carter, S. (2021). Artificial Intelligence and Entrepreneurship: Implications for Venture Creation in the Fourth Industrial Revolution. Entrepreneurship Theory and Practice, 45(5), 1028–1053. https://doi.org/10.1177/1042258720934581
Ćoćkalo, D., Bakator, M., Đorđević, D., Vorkapić, M., & Stanisavljev, S. (2021). Industry 5.0: A New Paradigm in Manufacturing. PaKSoM, 245–250.
Djordjevic, A., & Mihic, M. (2022). Strategic Importance and Sustainable Governance of High-Tech Business Incubators: Evidence from Serbia. In N. Mitrovic, G. Mladenovic, & A. Mitrovic (Eds.), Current Problems in Experimental and Computational Engineering (Vol. 323, pp. 199–221). Springer International Publishing. https://doi.org/10.1007/978-3-030-86009-7_11
Djordjević, L., Pekez, J., Novaković, B., Bakator, M., Djurdjev, M., Ćoćkalo, D., & Jovanović, S. (2023). Increasing Energy Efficiency of Buildings in Serbia—A Case of an Urban Neighborhood. Sustainability, 15(7), 6300. https://doi.org/10.3390/su15076300
Fatima, Z., Tanveer, M. H., Waseemullah, Zardari, S., Naz, L. F., Khadim, H., Ahmed, N., & Tahir, M. (2022). Production Plant and Warehouse Automation with IoT and Industry 5.0. Applied Sciences, 12(4), 2053. https://doi.org/10.3390/app12042053
Gladden, M. E. (2019). Who Will Be the Members of Society 5.0? Towards an Anthropology of Technologically Posthumanized Future Societies. Social Sciences, 8(5), 148. https://doi.org/10.3390/socsci8050148
González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st Century Skills Frameworks: Systematic Review. Sustainability, 14(3), 1493. https://doi.org/10.3390/su14031493
Grigorescu, A., Pelinescu, E., Ion, A. E., & Dutcas, M. F. (2021). Human Capital in Digital Economy: An Empirical Analysis of Central and Eastern European Countries from the European Union. Sustainability, 13(4), 2020. https://doi.org/10.3390/su13042020
Holroyd, C. (2022). Technological innovation and building a 'super smart' society: Japan's vision of society 5.0. Journal of Asian Public Policy, 15(1), 18–31. https://doi.org/10.1080/17516234.2020.1749340
Huang, S., Wang, B., Li, X., Zheng, P., Mourtzis, D., & Wang, L. (2022). Industry 5.0 and Society 5.0—Comparison, complementation and co-evolution. Journal of Manufacturing Systems, 64, 424–428. https://doi.org/10.1016/j.jmsy.2022.07.010
Ilic, B. S., & Stankovic, S. S. (2023). Analysis of the Sustainability of Supply Chains and Value Chain Management: Economy in the Republic of Serbia. In A. Taghipour (Ed.), Advances in Logistics, Operations, and Management Science (pp. 282–306). IGI Global. https://doi.org/10.4018/978-1-6684-9062-4.ch015
Johri, P., Singh, J. N., Sharma, A., & Rastogi, D. (2021). Sustainability of Coexistence of Humans and Machines: An Evolution of Industry 5.0 from Industry 4.0. 2021

10th International Conference on System Modeling & Advancement in Research Trends (SMART), 410–414. https://doi.org/10.1109/SMART52563.2021.9676275
Kolaro, K., Pitić, G., Vlačić, E., & Milosavljević, U. (2023). Competitiveness and sustainability in small and open economies in the age of industry 5.0. Ekonomika Preduzeca, 71(1–2), 113–127. https://doi.org/10.5937/EKOPRE2302113K
Kotler, P., Hermawan, K., & Iwan, S. (2021). Marketing 5.0: Technology for humanity. John Wiley & Sons.
Krivokuća, M., Ćoćkalo, D., & Bakator, M. (2021). The potential of digital entrepreneurship in Serbia. Anali Ekonomskog Fakulteta u Subotici, 57(45), 97–115. https://doi.org/10.5937/AnEkSub2145097K
Kumorotomo, W. (2020). Envisioning Agile Government: Learning from the Japanese Concept of Society 5.0 and the Challenge of Public Administration in Developing Countries. Proceedings of the Annual Conference of Indonesian Association for Public Administration (IAPA 2019). Annual Conference of Indonesian Association for Public Administration (IAPA 2019), Kelod Legian Bali, Indonesia. https://doi.org/10.2991/aebmr.k.200301.008
Lachvajderová, L., & Kadarova, J. (2023). Industry 4.0 Implementation and Industry 5.0 Readiness in Industrial Enterprises. Management and Production Engineering Review. https://doi.org/10.24425/mper.2022.142387
Lammers, M. (2019). Society 5.0: Discover how PropTech and Sustainable Development Goals come together. https://www.linkedin.com/pulse/society-50-discover-how-proptech-sustainable-goals-come-menno-lammers/
Mourtzis, D., Angelopoulos, J., & Panopoulos, N. (2022). A Literature Review of the Challenges and Opportunities of the Transition from Industry 4.0 to Society 5.0. Energies, 15(17), 6276. https://doi.org/10.3390/en15176276
Müller, J. M. (2019). Assessing the barriers to Industry 4.0 implementation from a workers' perspective. IFAC-PapersOnLine, 52(13), 2189–2194. https://doi.org/10.1016/j.ifacol.2019.11.530
Munirathinam, S. (2020). Industry 4.0: Industrial Internet of Things (IIOT). In Advances in Computers (Vol. 117, pp. 129–164). Elsevier. https://doi.org/10.1016/bs.adcom.2019.10.010
Nahavandi, S. (2019). Industry 5.0—A Human-Centric Solution. Sustainability, 11(16), 4371. https://doi.org/10.3390/su11164371
Neumann, W. P., Winkelhaus, S., Grosse, E. H., & Glock, C. H. (2021). Industry 4.0 and the human factor – A systems framework and analysis methodology for successful development. International Journal of Production Economics, 233, 107992. https://doi.org/10.1016/j.ijpe.2020.107992
Önday, Ö. (2019). Japan's Society 5.0: Going Beyond Industry 4.0. Business and Economics Journal, 10(2), 1–6. https://doi.org/10.4172/2151-6219.1000389
Orellana, C. (2020, July 21). Getting Ready For The 5th Industrial Revolution or "Industry 5.0." https://www.linkedin.com/pulse/getting-ready-5th-industrial-revolution-industry-50-christian-polo/
Papanastassiou, M., Pearce, R., & Zanfei, A. (2020). Changing perspectives on the internationalization of R&D and innovation by multinational enterprises: A review of the literature. Journal of International Business Studies, 51(4), 623–664. https://doi.org/10.1057/s41267-019-00258-0

Paschek, D., Mocan, A., & Draghici, A. (2019). Industry 5.0—The expected impact of next industrial revolution. 15–17.
Pavez, I., Kendall, L. D., & Laszlo, C. (2021). Positive-impact companies: Toward a new paradigm of value creation. Organizational Dynamics, 50(4), 100806. https://doi.org/10.1016/j.orgdyn.2020.100806
Permatasari, D., & Iqbal, M. (2022). Strengthening Entrepreneurship with a grit system and transformational technology to face society 5.0 in asian community. 104–109.
Pitić, G., Kržić, M., Vuković, A., & Ilić, M. (2020). Gaming industry in Serbia: A chance for a new industrial policy. Ekonomika Preduzeca, 68(1–2), 91–103. https://doi.org/10.5937/EKOPRE2002091P
Raja Santhi, A., & Muthuswamy, P. (2023). Industry 5.0 or industry 4.0S? Introduction to industry 4.0 and a peek into the prospective industry 5.0 technologies. International Journal on Interactive Design and Manufacturing (IJIDeM), 17(2), 947–979. https://doi.org/10.1007/s12008-023-01217-8
Ramadani, V., Agarwal, S., Caputo, A., Agrawal, V., & Dixit, J. K. (2022). Sustainable competencies of social entrepreneurship for sustainable development: Exploratory analysis from a developing economy. Business Strategy and the Environment, 31(7), 3437–3453. https://doi.org/10.1002/bse.3093
Rotatori, D., Lee, E. J., & Sleeva, S. (2021). The evolution of the workforce during the fourth industrial revolution. Human Resource Development International, 24(1), 92–103. https://doi.org/10.1080/13678868.2020.1767453
Saniuk, S., Grabowska, S., & Straka, M. (2022). Identification of Social and Economic Expectations: Contextual Reasons for the Transformation Process of Industry 4.0 into the Industry 5.0 Concept. Sustainability, 14(3), 1391. https://doi.org/10.3390/su14031391
Serpa, S., & Ferreira, C. (2018). Society 5.0 and Social Development [Preprint]. SOCIAL SCIENCES. https://doi.org/10.20944/preprints201811.0108.v1
Sgarbossa, F., Grosse, E. H., Neumann, W. P., Battini, D., & Glock, C. H. (2020). Human factors in production and logistics systems of the future. Annual Reviews in Control, 49, 295–305. https://doi.org/10.1016/j.arcontrol.2020.04.007
Stanojčić, U., Stamenković, D., Blagojević, I., & Popović, V. (2022). Society 5.0: The role of the automotive industry. Industrija, 50(3–4), 99–115. https://doi.org/10.5937/industrija50-42406
Tiwari, S., Bahuguna, P. C., & Walker, J. (2022). Industry 5.0: A Macroperspective Approach. In V. Garg & R. Goel (Eds.), Advances in Logistics, Operations, and Management Science (pp. 59–73). IGI Global. https://doi.org/10.4018/978-1-7998-8497-2.ch004
Trimi, S., & Berbegal-Mirabent, J. (2012). Business model innovation in entrepreneurship. International Entrepreneurship and Management Journal, 8(4), 449–465. https://doi.org/10.1007/s11365-012-0234-3
Tsaramirsis, G., Kantaros, A., Al-Darraji, I., Piromalis, D., Apostolopoulos, C., Pavlopoulou, A., Alrammal, M., Ismail, Z., Buhari, S. M., Stojmenovic, M., Tamimi, H., Randhawa, P., Patel, A., & Khan, F. Q. (2022). A Modern Approach towards an Industry 4.0 Model: From Driving Technologies to Management. Journal of Sensors, 2022, 1–18. https://doi.org/10.1155/2022/5023011
Vukmirović, D., Bobotinović, Ž., Comić, T., & Stanojević, N. (2023). HR Analytics: Serbian Perspective. 75–89. https://doi.org/10.1007/978-3-031-29717-5

Xu, X., Lu, Y., Vogel-Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0—Inception, conception and perception. Journal of Manufacturing Systems, 61, 530–535. https://doi.org/10.1016/j.jmsy.2021.10.006

Zizic, M. C., Mladineo, M., Gjeldum, N., & Celent, L. (2022). From Industry 4.0 towards Industry 5.0: A Review and Analysis of Paradigm Shift for the People, Organization and Technology. Energies, 15(14), 5221. https://doi.org/10.3390/en15145221