

Artificial Intelligence in the Western Balkans: Economic Impact, Ethical Challenges, and Regulatory Frameworks

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ABSTRACT

This paper explores the impact of artificial intelligence (AI) on the economies of the Western Balkans, focusing on research contributions from the past five years. It highlights the role of AI in the public sector and its potential to exacerbate economic inequality, especially among low-educated workers. The paper examines the ICT sector's potential to drive economic growth, job creation, and regional exports, while comparing regulatory frameworks related to data protection and AI implementation. Finally, it provides recommendations based on EU and AI regulation to support sustainable AI development in the region.

Keywords: artificial intelligence, Western Balkans, economy, Albania, impact.

INTRODUCTION:

This study examines the impact of artificial intelligence (AI) in the Western Balkans, with a focus on Albania, over the past five years. The ICT sector, including the AI revolution, has shown significant potential to drive economic growth, create employment opportunities for young entrepreneurs, and enhance regional exports. However, for AI to be transformative, the region must invest in workforce education, technological infrastructure, and sustainable development policies (Kokalari, 2024). With careful planning and regional collaboration, AI can significantly impact the economic development of the Western Balkans (Babikian, J. 2023). Faced with ethical challenges according to (Zuzaku, A., & Abazi, B. 2022), Albania and other countries of the WB need a coordinated approach to address privacy issues, the possibility of automation of biases and the use of technology for surveillance. The regulatory frameworks of (AI) according to (Pošćić, A., & Martinović, A. 2021), are in development stages as Personal Data Protection Law, GDPR regulation (General Data Protection Regulation).

METHODOLOGY:

For this literature review, a spanned study from 2020 – 2025 is used. **Identifying the sources of the study:** We used data from Google Scholar, Web of Science, SpringerLink, Science Direct with the help of keywords and phrases that included "the impact of AI on the economy in Albania and the countries of the Western Balkans", "the connection of AI with ethical challenges in Western Balkan countries", "the importance of regulatory frameworks in AI in the countries of Western Balkans". **Criteria for inclusion:** The main focus was on using keywords like "the impact of AI technology" on the platforms used generated 2,260,000 articles. Setting AI in WB generated 98,560 articles, excluding from articles with focus 5 years generated 55,800 articles. The addition of keywords restricted to 910 articles of which 30 were selected.

RESULTS:

Table 1. The impact of AI on Albania's economy compared with impact on WB's economy.

12 articles/impact of AI on Albania	15 articles/impact of AI on WB
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<p>"Debit card and credit card security (and their use in Albania)"(Puto E., Sevrani K., 2023) The paper highlights the growing use of digital payments in Albania, emphasizing the benefits of credit cards over debit cards for shopping.</p>	<p>"Green transition and smart specialisation in the Western Balkans." (European Commission, Radovanovic, N., & Stevanovic Carapina, H., 2024)This article provides an overview of various national strategies relevant to innovation in WB.</p>
<p>"Digital Transformation in the Western Balkans as an Opportunity for Managing Innovation in Small and Medium Businesses-Challenges and Opportunities."(Zuzaku & Abazi, 2022) This article discusses the challenges and opportunities of digitalization in Albania for the development of small and medium businesses. In order to implement digital transformation, it is necessary to have infrastructure.</p>	<p>European Commission, Radovanovic, N., Gerussi, E., Reid, A., Jevremovic, A. (2023) Unlocking the potential for regional collaboration in the ICT domain in the Western Balkans, Publications Office of the European Union, Luxembourg doi:10.2760/25755, JRC133944.The report provides an expert analysis of challenges and offers recommendations to foster regional collaboration in ICT to drive innovation.</p>
<p>"Impact of Innovation on Economic Growth in Balkan Countries." (Hysaj & Sulçaj, 2024) Innovation plays a role in economic activities with its impact in macroeconomic level.This study analyzes innovation in Albania using annual data.</p>	<p>"Impact of Innovation on Economic Growth in Balkan Countries." (Hysaj & Sulçaj, 2024) The findings of this article can help policymakers direct efforts to increase the impact of all pillars of innovation on economic growth in WB.</p>
<p>"Integration of Digital Technologies by Businesses in Western Balkan Countries, 2024"The paper concludes that strong policies and investments are key components for accelerating digital transformation and achieving digital goals.</p>	<p>"Integration of Digital Technologies by Businesses in Western Balkan Countries, 2024" The paper concludes how the intersection of digitalization and economic cooperation impacts economic advancement, through digitalization.</p>
<p>"International Balkan and Near Eastern Social Sciences Conferences - Home" With the development of the internet and information technologies, e-commerce has become an essential concept today, serving as a significant source for Albania.</p>	<p>"International Balkan and Near Eastern Social Sciences Conferences - Home" The development of technology, the rise of the internet, growth of information resources have created the phenomenon "e-commerce" contributeing economic development in WB.</p>
<p>"Digitalized Western Balkans: asset or liability to EU enlargement?"(Kokalari, 2024) This study explores the complex interaction between digitization, Albania enlargement, and political dynamics.</p>	<p>"Digitalized Western Balkans: asset or liability to EU enlargement?"(Kokalari, 2024) The article emphasizes the dual nature of digital transformation, requiring a careful approach to policy implementation.</p>
<p>"The importance of digital skills for the Western Balkans - comparative analysis between the Western Balkans and the European Union."(Levkov & Kitanovikj, 2024) The article aims to explore the level of digitalization, information, and digital content in Albania and compare it to the EU.</p>	<p>"The importance of digital skills for the Western Balkans - comparative analysis between the Western Balkans and the European Union."(Levkov & Kitanovikj, 2024) Here is shown that EU countries are far ahead on average in terms of basic or advanced digital skills (North Macedonia,Serbia.)</p>
<p>"Empowering the Circular Economy in Albania through Big Data Analytics: Opportunities, Case Studies, and Regional Insights." (Myftaraj & Fata, 2024) This article</p>	<p>"Catalysing Economic Growth in Balkan Countries."(Mkiyes, 2023) This paper offers a comparative analysis of digital divide and the level</p>

examines the use of big data analytics to promote circular economy in Alb.	of support for digitalization in Balkan states and the resilience of the Balkans towards digitalization.
"FinTech innovation in the Western Balkans: policy and regulatory implications and potential interventions." (Odorović et al., 2020) Financial and regulatory innovation enabled by technology is still in the early stages of development in Albania.	"FinTech innovation in the Western Balkans: policy and regulatory implications and potential interventions." (Odorović et al., 2020)The WB region must address limited access to capital and finance and low access to payment systems.
"Impact of artificial intelligence on the Albanian banking system." (Kolleshi & Golemi, 2024)This paper investigates the impact of AI on the banking sector by exploring the landscape formed by combination of advanced technologies.	"Digitalisation in the Western Balkans." (Ördögh, 2023) Digitalization has been a key priority in WB over the past decade, with the EU recognizing it as a driver of economic growth and encouraging the region's countries in investing.
"Inteligjenca biznesore dhe performanca e firmave" (Zatriqi, n.d.)This paper analyzes the importance of Business Intelligence and firm performance,involving micro, small, medium, and large enterprises. Businesses should invest in technological innovations.	"Artificial Intelligence and Nature-Inspired Optimization on Integrative Capacity of Renewable Energy in the Western Balkans." (Stevović et al., 2021) EU countries with lower potential for renewable resources have installed more renewable capacity.
"Managing the reskilling revolution for the digital age: Case study: Western Balkan countries." (Vidas-Bubanja et al., 2023) The analysis covers some of influencing changes in workers skills, as effects of digital technologies on job performance or youth employment.	"Managing the reskilling revolution for the digital age: Case study: Western Balkan countries." (Vidas-Bubanja et al., 2023) Issues of education, improving the skills of workers in line with new technological waves are becoming a significant aspect of modern business in WB.
	"Digital Transformation in the Western Balkans as an Opportunity for Managing Innovation in Small and Medium Businesses - Challenges and Opportunities." (Zuzaku & Abazi, 2022) Here are discussed the challenges and opportunities of digitalization in WB for development of small and medium businesses.
	"Use of new technologies in the field of protection and rescue during disasters." (Jovičić et al., 2024) Through the application of new technologies are identified key factors and challenges on economic protection.
	"Strategic Integration of Artificial Intelligence for Sustainable Businesses: Implications for data management and human user engagement in the Digital Era." (Jankovic & Curovic, 2023) The role of strategically integrating AI concepts in sustainability efforts within profitable businesses.

Table 2. Artificial Intelligence ethical challenges in Abania and in other Western Balkans.

2 articles/AI ethical challenges (Albania)	6 articles/AI ethical challenges (other WB)
“Emerging and disruptive technologies in the Western Balkans: Do we need a new arms control regime?” (Jevtic & Kostic-Sulejic, 2023) This paper explores the intersection of AI and military technologies, raising ethical implications.	“Balancing acts: ethics, regulation, and accountability in AI law and policy” (Babikian, 2023) The need for ethical guidelines and accountability in the fast-evolving AI landscape, in designing laws with technological advancements.
“Unlocking regional value chains: Fintech’s role in the Western Balkans’ integration into global markets”(Shaqiri et al., 2024) With AI and digital technologies shaping the future of global value chains, concerns around fairness and impact on local industries arise.	“Artificial Intelligence a ‘Right’ or ‘Violation’ of human rights and freedoms in the 21st century” (Bajraktari & Qatani, 2024) This article raises questions about the impact of AI on human rights around privacy, autonomy, safeguard human rights.
	“Artificial intelligence potential in higher education institutions”(Bucea-Manea-Ţoniş et al., 2022) This study emphasizes the importance of integrating AI into educational frameworks while fostering creativity and ethical values.
	“Emerging and disruptive technologies in the Western Balkans: Do we need a new arms control regime?”(Jevtic & Kostic-Sulejic, 2023) This paper explores the intersection of AI and military technologies and ethical implications of new technologies in arms control and security.
	“Artificial Intelligence Evolution: On the Virtue of Killing in the Artificial Age”(Puaschunder, 2019) This article presents an ethical dilemma about the power of AI to make life-and-death decisions and the concept of AI rights in controlling issues like overpopulation explored.
	“Unlocking regional value chains: Fintech’s role in the Western Balkans’ integration into global markets” (Shaqiri et al., 2024) This paper touches the ethical challenges of digital transformation and digital technologies shaping the future of global value chains around fairness.

Table 3. AI regulatory frameworks in Albania compared with AI regulatory frameworks in WB.

2 art./AI regulatory frameworks (Albania)	7 art./AI regulatory frameworks(other WB)
"FinTech innovation in the Western Balkans: policy and regulatory implications and potential interventions."(Odorović et al., 2020) This study explores the development of technology-driven financial, regulatory innovation in fintech sector.	"Balancing acts: ethics, regulation, and accountability in AI law and policy." (Babikian, 2023) This paper addresses the regulatory challenges posed by the rapid adoption of AI technologies to balance innovation in WB.

"Towards a regulatory framework for artificial intelligence - an EU approach." (Pošćić & Martinović, 2021) This article examines the impact of AI on business models and markets, highlighting both its potential benefits and risks.	"Free access to information: An analysis of the regulatory frameworks in selected Western Balkan countries." (Bojović & Reljanović, 2022) This study is related to freedom of information laws,providing approach in governance integrity.
	"Creating shared value as a framework for responsible application of artificial intelligence in Serbia." (Bulatović, 2024) The paper relies on an analysis of AI, creating shared value, and Serbia's strategies for AI development.
	"The regional context of intelligence services in the parliamentary system: A comparative study of the Western Balkans." (Gashi & Brovina, 2022) This research analyzes the role of intelligence services in WB within parliamentary systems focusing on legal frameworks
	"It's time for Artificial Intelligence Governance." (Hadzovic et al., 2024) This article proposes a governance model for AI and the IoT to ensure human rights and fundamental freedoms.
	"FinTech innovation in the Western Balkans: policy and regulatory implications and potential interventions." (Odorović et al., 2020) This study explores the early development of technology-driven financial and regulatory innovation in WB.
	"Towards a regulatory framework for artificial intelligence - an EU approach." (Pošćić & Martinović, 2021) This article examines the impact of AI on business models and markets, highlighting potential benefits and risks.

CONCLUSIONS

To improve confidence in the implementation of artificial intelligence (AI), the European Union (EU) institutions are in the final stages of developing an ethical and legal framework. The European Union (EU) is in the final stages of implementing the AI Act, which is the world's first legal framework for AI. The push for implementing advanced technologies like Artificial Intelligence (AI) in the Western Balkan economies, including Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo, is indeed gaining momentum. One of the main motivators behind AI adoption in the public sector is to increase efficiency and transparency in government operations. AI could automate administrative tasks, improve the delivery of public services and reduce the bureaucracy that often hinders timely services. The European Union's (EU) approach to Artificial Intelligence (AI) regulation provides a solid foundation for understanding how to govern AI in a responsible, ethical, and transparent way.

REFERENCES

- [1] https://jns.edu.al/wp-content/uploads/2023/08/1_Enida_Puto_K_Sevrani_Perf_227ca30383.pdf
- [2] European Commission. Radovanovic, N., & Stevanovic Carapina, H. (2024). *Green transition and smart specialisation in the western balkans*. Tech. Rep., Joint Research Centre.

- [3] Babikian, J. (2023, June 30). *Balancing acts: ethics, regulation, and accountability in AI law and policy*. <https://jmsrr.com/index.php/Journal/article/view/19>
- [4] Bajraktari, H., & Qatani, V. (2024). Artificial Intelligence a “Right” or “Violation” of human rights and freedoms in the 21st century. In *Advances in electronic government, digital divide, and regional development book series* (pp. 43–56). <https://doi.org/10.4018/979-8-3693-7205-0.ch002>
- [5] European Commission, Radovanovic, N., Gerussi, E., Reid, A., Jevremovic, A.(2023). *Unlocking the potential for regional collaboration in the ICT domain in the Western Balkans*, Publications Office of the European Union, Luxembourg doi:10.2760/25755, JRC133944.
- [6] Bojović, A. K., & Reljanović, M. (2022). *Free access to information: An analysis of the regulatory frameworks in selected Western Balkan countries*. <https://doi.org/10.46793/80186818.fai>
- [7] Bucea-Manea-Țoniș, R., Kuleto, V., Gudei, S. C. D., Lianu, C., Lianu, C., Ilić, M. P., & Păun, D. (2022). Artificial intelligence potential in higher education institutions Enhanced learning environment in Romania and Serbia. *Sustainability*, 14(10), 5842. <https://doi.org/10.3390/su14105842>
- [8] Bulatović, G. (2024). Creating shared value as a framework for responsible application of artificial intelligence in Serbia. *Serbian Journal of Management*, 19(2), 413–427. <https://doi.org/10.5937/sjm19-50164>
- [9] Gashi, B., & Brovina, N. (2022). The regional context of intelligence services in the parliamentary system: A comparative study of the Western Balkans. *Journal of Intelligence History*, 23(1), 40–53. <https://doi.org/10.1080/16161262.2022.2111486>
- [10] Hadzovic, S., Becirspahic, L., & Mrdovic, S. (2024). It's time for Artificial Intelligence Governance. *Internet of Things*, 27, 101292. <https://doi.org/10.1016/j.iot.2024.101292>
- [11] Hysaj, A., & Sulçaj, K. (2024). IMPACT OF INNOVATION ON ECONOMIC GROWTH IN BALKAN COUNTRIES. *AGORA INTERNATIONAL JOURNAL OF ECONOMICAL SCIENCES*, 18(1), 65–73. <https://doi.org/10.15837/aijes.v18i1.6711>
- [12] *INTEGRATION OF DIGITAL TECHNOLOGIES BY BUSINESSES IN WESTERN BALKAN COUNTRIES*. (2024). Questa Soft. <https://www.ceeol.com/search/article-detail?id=1223350>
- [13] *International Balkan and Near Eastern Social Sciences Conferences - home*. (n.d.). <https://www.ibaness.org/>
- [14] Jankovic, S. D., & Curovic, D. M. (2023). Strategic Integration of Artificial Intelligence for Sustainable Businesses: Implications for data management and human user engagement in the Digital Era. *Sustainability*, 15(21), 15208. <https://doi.org/10.3390/su152115208>
- [15] Jevtic, M., & Kostic-Sulejic, M. (2023). Emerging and disruptive technologies in the Western Balkans: Do we need a new arms control regime? *Medjunarodni Problemi*, 75(2), 211–235. <https://doi.org/10.2298/medjp2302211j>
- [16] Jovičić, R., Gostimirović, L., & Milašinović, S. (2024). Use of new technologies in the field of protection and rescue during disasters. *International Journal of Disaster Risk Management*, 6(1), 111–122. <https://doi.org/10.18485/ijdrm.2024.6.1.8>
- [17] Kokalari, A. (2024). Digitalized Western Balkans: asset or liability to EU enlargement? *Cadmus EUI*. <https://doi.org/10.2870/5083134>
- [18] Levkov, N., & Kitanovikj, B. (2024). The importance of digital skills for the Western Balkans -comparative analysis between the Western Balkans and the European Union. *Economy Business and Development an International Journal*, 5(1), 28–43. <https://doi.org/10.47063/ebd.00016>
- [19] Mkiyes, H. (2023, December 31). *CATALYSING ECONOMIC GROWTH IN BALKAN COUNTRIES*. <https://review.pressburgcentre.org/per/article/view/23>
- [20] Myftaraj, E., & Fata, I. (2024). *Empowering the Circular Economy in Albania through Big Data Analytics: Opportunities, Case Studies, and Regional Insights*. <http://hdl.handle.net/20.500.14044/25952>
- [21] Odorović, A., McKain, G., Garvey, K., Schizas, E., Zhang, B. Z., Rowan, P., & Ziegler, T. (2020). FinTech innovation in the Western Balkans: policy and regulatory implications and potential interventions. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3619214>
- [22] Ördögh, T. (2023). Digitalisation in the Western Balkans. *Academic and Applied Research in Military and Public Management Science*, 22(3), 91–107. <https://doi.org/10.32565/aarms.2023.3.6>
- [23] Pošćić, A., & Martinović, A. (2021). *Towards a regulatory framework for artificial intelligence - an EU approach*. <https://urn.nsk.hr/urn:nbn:hr:118:566247>

- [24] Puaschunder, J. M. (2019). Artificial Intelligence Evolution: On the Virtue of Killing in the Artificial Age. *Zenodo (CERN European Organization for Nuclear Research)*. <https://doi.org/10.5281/zenodo.3355691>
- [25] Kolleshi, M., & Golemi, E. (2024). Impact of artificial intelligence on the Albanian banking system. *Interdisciplinary Journal of Research and Development*, 11(2), 75. <https://doi.org/10.56345/ijrdv11n210>
- [26] Shaqiri, G., Kacani, J., & Qorraj, G. (2024). Unlocking regional value chains: Fintech's role in the Western Balkans' integration into global markets. *European Journal of Government and Economics*, 13(2), 206–224. <https://doi.org/10.17979/ejge.2024.13.2.10173>
- [27] Stevović, I., Kirin, S., & Bozić, I. (2021). ARTIFICIAL INTELLIGENCE AND NATURE-INSPIRED OPTIMIZATION ON INTEGRATIVE CAPACITY OF RENEWABLE ENERGY IN THE WESTERN BALKAN. *Contemporary Materials*, 12(2). <https://doi.org/10.7251/comen2102226s>
- [28] Vidas-Bubanja, M., Bogetić, S., Bešić, C., Kalinić, Z., & Bubanja, I. (2023). Managing the reskilling revolution for the digital age: Case study: Western Balkan countries. *Journal of Engineering Management and Competitiveness*, 13(1), 37–52. <https://doi.org/10.5937/jemc2301037v>
- [29] Zatriqi, R. (n.d.). *INTELIGJENCA BIZNESORE DHE PERFORMANCA e FIRMAVE*. UBT Knowledge Center. <https://knowledgecenter.ubt-uni.net/etd/2103>
- [30] Zuzaku, A., & Abazi, B. (2022). Digital transformation in the Western Balkans as an opportunity for managing innovation in small and medium businesses - Challenges and opportunities. *IFAC-PapersOnLine*, 55(39), 60–65. <https://doi.org/10.1016/j.ifacol.2022.12.011>