

# **EMERGING RESEARCH TRENDS IN GREEN INTELLECTUAL CAPITAL: A BIBLIOMETRIC ANALYSIS**

**Lavinia-Mihaela BECEA<sup>a\*</sup>, Mirela POPA<sup>b</sup>**

*<sup>a), b)</sup> Babeș-Bolyai University, Faculty of Economics and Business Administration,  
Cluj-Napoca, Romania*

*Please cite this article as:*

Becea, L.M. and Popa, M., 2025. Emerging research trends in green intellectual capital: A bibliometric analysis. *Review of Economic Studies and Research Virgil Madgearu*, 18(1), pp.21-42. doi: 10.24193/RVM.2025.18.125.

*Article History:*

Received: 12 January 2025  
Accepted: 27 February 2025

**Abstract:** This article aims to provide an overview of the research trends related to green intellectual capital (GIC). A bibliometric analysis was performed using VosViewer software, examining 144 papers through keyword co-occurrence networks. The findings reveal four key research trends and suggest a research agenda focused on green intangible assets. The study emphasizes that green IC has gained considerable attention in management literature, particularly as it relates to enhancing green performance, green human resource management, firm performance, and sustainability. This study contributes to the existing literature by broadening the understanding of green IC, while outlining the key research themes explored in the literature. Also, this study offers valuable insights for managers and policymakers aiming to effectively incorporate green IC into their business models by highlighting the mechanisms through which it can support the accomplishment of their targets.

**Key words:** green intellectual capital; literature review; bibliometric analysis; research trends

**JEL Classification:** M21; M51; O15; Q56

---

\* Corresponding author. E-mail address: [lavinia.becea@econ.ubbcluj.ro](mailto:lavinia.becea@econ.ubbcluj.ro).

## **References:**

1. Ahlawat, D., Sharma, P. and Kumar, S. 2023. A systematic literature review of current understanding and future scope on Green Intellectual Capital. *Intangible Capital*, 19(2), pp.165-188. <https://doi.org/10.3926/ic.2191>.
2. Al Issa, H. E., Abdullatif, T. N., Ntayi, J. and Abdelsalam, M. K. 2023. Green intellectual capital for sustainable healthcare: evidence from Iraq. *Journal of Intellectual Capital*, 24(4), pp. 929-947. <https://doi.org/10.1108/JIC-02-2022-0046>.
3. Alam, M. N., Turi, J. A., Khastoori, S., Alias, R. B., Rahman, M. A. and Hossin, M. S. 2021. Does Environment Management Practice Play a Mediating Role between Green Intellectual Capital and Green Human Resource Management? Edited by Research Square. Preprints. <https://doi.org/10.21203/rs.3.rs-443303/v1>.
4. Ali, M., Puah, C. H., Ali, A., Raza, S. A. and Ayob, N. 2022. Green intellectual capital, green HRM and green social identity toward sustainable environment: a new integrated framework for Islamic banks. *International Journal of Manpower*, 43(3), pp. 614-638. <https://doi.org/10.1108/IJM-04-2020-0185>.
5. Arora, N. K., Fatima, T., Mishra, I., Verma, M., Mishra, J. and Mishra, V. 2018. Environmental sustainability: challenges and viable solutions. *Environmental Sustainability*. <https://doi.org/10.1007/s42398-018-00038-w>.
6. Becker, G. S. 2009. *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
7. Benevene, P., Buonomo, I., Kong, E., Pansini, M. and Farnese, M. L. 2021. Management of Green Intellectual Capital: Evidence-Based Literature Review and Future Directions. *Sustainability*, 13(15). <https://doi.org/10.3390/su13158349>.
8. Bombiak, E. 2021. Assessment of the level of green intellectual capital development-Polish enterprises case study. European Research Studies Journal (University of Piraeus. International Strategic Management Association) 24(1), pp.1139-1156. <https://www.um.edu.mt/library/oar/handle/123456789/81204>.

9. Bontis, N. 1998. Intellectual capital: an exploratory study that develops measures and models. *Management Decision*, 36(2), pp. 63-76. <https://doi.1108/00251749810 204142>.
10. Borgman, C. L. and Furner, J. 2002. Scholarly communication and bibliometrics. *Annual Review of Information Science and Technology*, 36(1), pp. 1-53.
11. Cavicchi, C. and Vagnoni, E. 2017. Does intellectual capital promote the shift of healthcare organizations towards sustainable development? Evidence from Italy. *Journal of Cleaner Production*, 153, pp. 275-286. <https://doi.org/10.1016/j.jclepro.2017.03.175>.
12. Chang, C. H. and Chen, Y. S. 2012. The determinants of green intellectual capital. *Management Decision*, 50(1). <https://doi.org/10.1108/00251741211194886>.
13. Chaudhry, N. I., Bilal, A., Awan, M. U. and Bashir, A. 2016. The role of environmental consciousness, green intellectual capital management and competitive advantage on financial performance of the firms: an evidence from manufacturing sector of Pakistan. *Journal of Quality and Technology Management*, 13(2), pp. 51-70.
14. Chen, Y. S. 2008a. The positive effect of green intellectual capital on competitive advantages of firms. *Journal of Business Ethics*, (Springer) 77(3), pp. 271-286. <https://doi.org/10.1007/s10551-006-9349-1>.
15. De Villiers, C. and Sharma, U. 2020. A critical reflection on the future of financial, intellectual capital, sustainability and integrated reporting. *Critical Perspectives on Accounting*, 70, 101999. <https://doi.org/10.1016/j.cpa.2017.05.003>.
16. Delgado-Verde, M., Amores-Salvadó, J., Martín-de Castro, G. and Navas-López, J. E. 2014. Green intellectual capital and environmental product innovation: the mediating role of green social capital. *Knowledge Management Research and Practice*, 12(3), pp. 261-275. <https://doi.org/10.1057/kmrp.2014.1>.
17. Gharib, M., Shabbir Alam, M., Thonse Hawaldar, I., Murshed, M., Khan, U., Alvarado, R. and Ur Rehman, I. 2023. Roles of green intellectual capital facets on environmental sustainability

- in Oman. *Economic research-Ekonomska istraživanja*, 36(3). <https://doi.org/10.1080/1331677X.2022.2149591>.
18. Guo, L., Xu, F., Feng, Z. and Zhang, G. 2016. A bibliometric analysis of oyster research from 1991 to 2014. *Aquaculture International*, 24, pp. 327-344. <https://doi.org/10.1007/s10499-015-9928-1>.
19. Hina, K., Khalique, M., Shaari, J. A. N., Mansor, S. A., Kashmeeri, S. and bin Yaacob, M. R. 2024. Nexus between green intellectual capital and the sustainability business performance of manufacturing SMEs in Malaysia. *Journal of Intellectual Capital*, 25(3), pp. 233-252. <https://doi.org/10.1108/JIC-11-2022-0226>.
20. Huang, C. L. and Kung, F. H. 2011. Environmental consciousness and intellectual capital management: Evidence from Taiwan's manufacturing industry. *Management Decision*, 49(9), pp. 405-1425. <https://doi.org/10.1108/0025174111173916>
21. Jermsittiparsert, K. 2021. Green Intellectual Capital Factors Leading to Business Sustainability. *E3S Web of Conferences*, 277, 06009. <https://doi.org/10.1051/e3sconf/202127706009>.
22. Jirakraisiri, J., Badir, Y. F. and Frank, B. 2021. Translating green strategic intent into green process innovation performance: the role of green intellectual capital. *Journal of Intellectual Capital*, 22(7), pp. 43-67. <https://doi.org/10.1108/JIC-08-2020-0277>.
23. Johnson, W. H. 1999. An integrative taxonomy of intellectual capital: measuring the stock and flow of intellectual capital components in the firm. *International Journal of Technology Management*, 18(5-8), pp. 562-575. <https://doi.org/10.1504/IJTM.1999.002788>.
24. Khanlarov, E., Lyeonov, S. and Starchenko, L. 2020. Green intellectual capital and company performance. *Economic and Social Development*. Book of Proceedings, pp. 100-109.
25. LealFilho, W., Tripathi, S. K., AndradeGuerra, J. B. S. O. D., Giné-Garriga, R., Orlovic Lovren, V. and Willats, J. 2019. Using the sustainable development goals towards a better understanding of sustainability challenges. *International Journal of*

- Sustainable Development and World Ecology*, 26 (2), pp. 179-190. <https://doi.org/10.1080/13504509.2018.1505674>.
26. Li, R., Kong, X., Xiao, Y. and Wang, S. 2022. Factors affecting green intellectual capital on green dynamic capabilities and environmental performance in cultural and creative industry. *Journal of Environmental Protection and Ecology*, 23 (1), pp. 228-235.
27. López-Gamero, M. D., Zaragoza-Sáez, P., Claver-Cortés, E. and Molina-Azorín, J. F. 2011. Sustainable development and intangibles: building sustainable intellectual capital. *Business Strategy and the Environment*, 20(1), pp. 18-37. <https://doi.org/10.1002/bse.666>.
28. Mahmood, F. and Nasir, N. 2023. Impact of green human resource management practises on sustainable performance: serial mediation of green intellectual capital and green behaviour. *Environmental Science and Pollution Research*, (30)39, pp. 90875-90891. <https://doi.org/10.1007/s11356-023-28541-6>.
29. Malik, S. Y., Cao, Y., Mughal, Y. H., Kundi, G. M., Mughal, M. H. and Ramayah, T. 2020. Pathways towards sustainability in organizations: Empirical evidence on the role of green human resource management practices and green intellectual capital. *Sustainability*, 12(8), 3228. <https://doi.org/10.3390/su12083228>.
30. Mansoor, A., Jahan, S. and Riaz, M. 2021. Does green intellectual capital spur corporate environmental performance through green workforce? *Journal of Intellectual Capital*, 22(5), pp. 823-839. <https://doi.org/10.1108/JIC-06-2020-0181>.
31. Marco-Lajara, B., Zaragoza-Sáez, P. C., Martínez-Falcó, J. and Sánchez-García, E. 2023. Does green intellectual capital affect green innovation performance? Evidence from the Spanish wine industry. *British Food Journal*, 125(4), 14691487. <https://doi.org/10.1108/BFJ-03-2022-0298>.
32. Mer, A. and Saini, A. 2025. Green intellectual capital: a bibliometric analysis. *International Journal of Learning*

- and Intellectual Capital, 21(5), pp. 571-591. <https://doi.org/10.1504/IJLIC.2024.143680>.
33. Nisar, Q. A., Haider, S., Ali, F., Jamshed, S., Ryu, K. and Gill, S. S. 2021. Green human resource management practices and environmental performance in Malaysian green hotels: The role of green intellectual capital and pro-environmental behavior. *Journal of Cleaner Production*, 311, 127504. <https://doi.org/10.1016/j.jclepro.2021.127504>.
34. Nivlouei, F. B. and Khass, E. D. 2014. The role of green intellectual capital management in acquiring green competitive advantage for companies. *International Journal of Management Research and Development (IJMRD)* 4(2), pp. 41-58. Available at SSRN: <https://ssrn.com/abstract=3549761>.
35. Orr, D. W. 2002. Four challenges of sustainability. *Conservation Biology*, 16(6), pp. 1457-1460. <https://www.jstor.org/stable/3095399>.
36. Popescu, C. R. G. 2019. Addressing Intellectual Capital in the Context of Integrated Strategy and Performance: Emphasizing the Role of Companies' Unique Value Creation Mechanism, While Targeting Better Organizational Reporting In Romania: The Case of Green Marketing. *Journal of Marketing Research and Case Studies*, 672821. <https://doi.org/10.5171/2019.672821>.
37. Ramos-Rodríguez, A. R. and Ruiz-Navarro, J. 2004. Changes in the intellectual structure of strategic management research: A bibliometric study of the Strategic Management Journal, 1980–2000. *Strategic Management Journal*, 25(10), pp. 981-1004. <https://doi.org/10.1002/smj.397>.
38. Rehman, S. U., Kraus, S., Shah, S. A., Khanin, D. and Mahto, R. V. 2021. Analyzing the relationship between green innovation and environmental performance in large manufacturing firms. *Technological Forecasting and Social Change*, 163. <https://doi.org/10.1016/j.techfore.2020.120481>.
39. Sabir, M. R., Rehman, M. and Asghar, W. 2020. Assessing the mediating role of organization learning capability between the relationship of green intellectual capital and business

- sustainability. *Journal of Business and Social Review in Emerging Economies*, 6(4), pp. 1289-1301. <https://doi.org/10.26710/jbsee.v6i4.1416>.
40. Sarwar, A. and Mustafa, A. 2024. Analysing the impact of green intellectual capital on environmental performance: the mediating role of green training and development. *Technology Analysis and Strategic Management*, 36(11), pp. 3357-3370. <https://doi.org/10.1080/09537325.2023.2209205>.
41. Secundo, G., Ndou, V., Del Vecchio, P. and De Pascale, G. 2020. Sustainable development, intellectual capital and technology policies: A structured literature review and future research agend. *Technological Forecasting and Social Change*, 153, 119917. <https://doi.org/10.1016/j.techfore.2020.119917>.
42. Shehzad, M. U., Zhang, J., Dost, M., Ahmad, M. S. and Alam, S. 2023. Linking green intellectual capital, ambidextrous green innovation and firms green performance: evidence from Pakistani manufacturing firms. *Journal of Intellectual Capital*, 24(4), pp. 974-1001. <https://doi.org/10.1108/JIC-02-2022-0032>.
43. Shi, J. G., Miao, W. and Si, H. 2019. Visualization and analysis of mapping knowledge domain of urban vitality research. *Sustainability*, 11(4), p. 988. <https://doi.org/10.3390/su11040988>.
44. Silva, L., Costa, V. and Loureiro, P. 2024. Green intellectual capital and organizational sustainability: a bibliometric study. *Applied Business and Management*, 567. <https://doi.org/10.58869/2024.ICABM.02>.
45. Tseng, C. Y. and James Goo, Y. J. 2005. Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers. *R&D Management*, 35(2), pp. 187-201. <https://doi.org/10.1111/j.1467-9310.2005.00382.x>.
46. Ullah, H., Wang, Z., Mohsin, M., Jiang, W. and Abbas, H. 2022. Multidimensional perspective of green financial innovation between green intellectual capital on sustainable business:the case of Pakistan. *Environmental Science and Pollution Research*, 29(4), pp. 5552-5568. <https://doi.org/10.1007/s11356-021-15919-7>.

47. Wang, C. H. and W. J. Juo. 2021. An environmental policy of green intellectual capital: Green innovation strategy for performance sustainability. *Business Strategy and the Environment*, 30(7), pp. 3241-3254. <https://doi.org/10.1002/bse.2800>.
48. Yahya, N. A., Arshad, R. and Kamaluddin, A. 2015. Green intellectual capital resources as drivers of firms' competitive advantage. International Conference on Intellectual Capital and Knowledge Management and Organisational Learning. Academic Conferences International Limited. 327.
49. Yong, J. Y., Yusliza, M. Y., Ramayah, T. and Fawehinmi, O. 2019. Nexus between green intellectual capital and green human resource management. *Journal of Cleaner Production*, 215, pp. 364-374. <https://doi.org/10.1016/j.jclepro.2018.12.306>
50. Yong, J. Y., Yusliza, M. Y., Ramayah, T., Farooq, K. and Tanveer, M. I. 2023. Accentuating the interconnection between green intellectual capital, green human resource management and sustainability. *Benchmarking: An International Journal*, 30(8), pp. 2783-2808. <https://doi.org/10.1108/BIJ-11-2021-0641>.
51. Youndt, M. A., Subramaniam, M. and Snell, S. A. 2004. Intellectual capital profiles: An examination of investments and returns. *Journal of Management Studies*, 41 (2), pp. 335-361. <https://doi.org/10.1111/j.1467-6486.2004.00435.x>.
52. Yousaf, Z. 2021. Go for green: green innovation through green dynamic capabilities: assessing the mediating role of green practices and green value co-creation. *Environmental Science and Pollution Research*, 28(39), pp. 54863-54875. <https://doi.org/10.1007/s11356-021-14343-1>.
53. Yusliza, M. Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Faezah, J. N. and Muhammad, Z. 2020. A structural model of the impact of green intellectual capital on sustainable performance. *Journal of Cleaner Production*, 249, 119334. <https://doi.org/10.1016/j.jclepro.2019.119334>.
54. Yusoff, Y. M., Omar, M. K., Zaman, M. D. K. and Samad, S. 2019. Do all elements of green intellectual capital contribute toward

- business sustainability? Evidence from the Malaysian context using the Partial Least Squares method. *Journal of Cleaner Production*, 234, pp. 626-637. <https://doi.org/10.1016/j.jclepro.2019.06.153>
55. Zahra, A. and Ayub, H. 2022. Impact of Green Intellectual Capital on Sustainable Green Banking: Moderating Role of Competitive Pressure. *Journal of Accounting and Finance in Emerging Economies*, 8(2), pp. 251-262. <https://doi.org/10.26710/jafee.v8i2.2294>.