

International Journal of Industrial Engineering and Management



Beyond the Landlords: Exploring Perceptual Attributes and Benefits of Science Parks from an Ecosystem Perspective

Z. Shen^a (D) 0009-0002-1838-6565, N. Zivlak^b (D) 0000-0002-5425-7464,

D. Ćirić Lalić^c (D) 0000-0002-4834-6487, K. Y. Dong^d (D) 0009-0009-0798-4149,

G. Han^{e,*} (D) 0000-0003-1549-6371

^a The University of Hong Kong, Hong Kong, China;

^b Emlyon Business School, Lyon, France;

^c University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia;

^d Johns Hopkins University, Baltimore, MD, United States;

^e Shanghai Jiao Tong University, Shanghai, China

References

- A. Albahari, G. Catalano, and P. Landoni, "Evaluation of national science park systems: A theoretical framework and its application to the Italian and Spanish systems," Technol. Anal. Strateg. Manag., vol. 25, no. 5, pp. 599–614, 2013, doi: 10.1080/09537325.2013.785508.
- [2] C. Helmers, "Choose the neighbor before the house: Agglomeration externalities in a UK science park," J. Econ. Geogr., vol. 19, no. 1, pp. 31–55, 2019, doi: 10.1093/jeg/lbx042.
- [3] S. Hasan, A. Faggian, H. A. Klaiber, and I. Sheldon, "Agglomeration economies or selection? An analysis of Taiwanese science parks," Int. Reg. Sci. Rev., vol. 41, no. 3, 2016, doi: 10.1177/0160017616642822.
- [4] C.-H. Yang, K. Motohashi, and J.-R. Chen, "Are new technology-based firms located on science parks really more innovative? Evidence from Taiwan," Res. Policy, vol. 38, no. 1, pp. 77–85, 2009, doi: 10.1016/j.respol.2008.09.001.
- [5] A. Albahari, A. Barge-Gil, S. Pérez-Canto, and A. Modrego, "The influence of science and technology park characteristics on firms' innovation results," Pap. Reg. Sci., 2016, doi: 10.1111/pirs.12253.
- [6] R. Ferguson and C. Olofsson, "Science parks and the development of NTBFs-Location, survival and growth," J. Technol. Transf., vol. 29, pp. 5-17, 2004, doi: 10.1023/B:JOTT.0000011178.44095.cd.
- [7] Á Á. R. Vásquez-Urriago, A. Barge-Gil, and A. Modrego Rico, "Science and technology parks and cooperation for innovation: Empirical evidence from Spain," Res. Policy, vol. 45, no. 1, pp. 137–147, 2016, doi: 10.1016/j.respol.2015.07.006.
- [8] M. Squicciarini, "Science parks, knowledge spillovers, and firms' innovative performance: Evidence from Finland," Economics Discussion Papers, no. 2009-32, Kiel Institute for the World Economy, 2009. [Online]. Available: http://www.economics-ejournal. org/economics/discussionpapers/2009-32.
- [9] E. Mityakov and N. Kulikova, "Expert insights into mesolevel industrial ecosystems: pathways for economic transformation", Int. J. Ind. Eng. Manag., vol. 15, no. 3, pp. 213–224, Sep. 2024, doi: 10.24867/IJIEM-2024-3-358.
- [10] L. Lecluyse and M. Knockaert, "Disentangling satisfaction of tenants on science parks: A multiple case study in Belgium," Technovation, vol. 98, 2020, Art. no. 102156, doi: 10.1016/j.technovation.2020.102156.
- [11] G. Teixeira, L. P. Ferreira, and I. Costa Melo, "Digital Transformation in Industrial SMEs: A Holistic Approach to Symbiotic Relationships with Technology", Int. J. Ind. Eng. Manag., p. article in press, 2025, doi: 10.24867/IJIEM-373.
- [12] W. K. B. Ng, R. Appel-Meulenbroek, M. Cloodt, and T. Arentze, "Perceptual measures of science parks: Tenant firms' associations between science park attributes and benefits," Technol. Forecast. Soc. Change, vol. 163, 2021, Art. no. 120408, doi: 10.1016/j. techfore.2020.120408.

- [13] Y. L. Wang, M. L. Song, L. Yang, J. H. Chen, and P. Li, "Financing green innovation: A simulation approach for manufacturing enterprises," Int. J. Sim. Model., vol. 23, no. 2, pp. 347–358, Jun. 2024, doi: 10.2507/JJSIMM23-2-CO8.
- [14] D. Zhu and J. Tann, "A regional innovation system in a small-sized region: A clustering model in Zhongguancun Science Park," Technol. Anal. Strateg. Manag., vol. 17, no. 3, pp. 375–390, 2005, doi: 10.1080/09537320500211789.
- [15] Y. Zou and W. Zhao, "Anatomy of Tsinghua University Science Park in China: Institutional evolution and assessment," J. Technol. Transf., vol. 39, pp. 663–674, 2014, doi: 10.1007/s10961-013-9314-y.
- [16] S. Zeng, X. Xie, and C. Tam, "Evaluating innovation capabilities for science parks: A system model," Ukio Technologinis Ir Ekonominis Vystymas, vol. 16, no. 3, pp. 397–413, 2010, doi: 10.3846/tede.2010.25.
- [17] F. Malerba and M. McKelvey, "Knowledge-intensive innovative entrepreneurship: Integrating Schumpeter, evolutionary economics, and innovation systems," Small Bus. Econ., vol. 54, pp. 503–522, 2020, doi: 10.1007/s11187-018-0060-2.
- [18] Zizhu, "Introduction of Zizhu," 2024. [Online]. Available: https://en.zizhupark.com. [Accessed: Dec. 18, 2024].
- [19] Y. Zhang, "Critical factors for science park management: The North American and European experience," Int. J. Entrepreneurship Innov. Manag., vol. 4, no. 6, pp. 575–586, 2004.
- [20] J. Zhu, G. Liu, and F. Zhang, "Multi-agent collaborative R&D strategies of general-purpose technologies: Commonality and synergy perspective," Tehn. Vjesn., vol. 30, no. 2, pp. 597–607, Feb. 2023, doi: 10.17559/TV-20220613041011.
- [21] F. Sabbagh, "The impact of renewable energies on sustainable development," J. Eng., Manag. Inf. Technol., pp. 137–140, 2023, doi: 10.61552/JEMIT.2023.03.004.
- [22] A. Albahari, A. Barge-Gil, S. Pérez-Canto, et al., "The effect of science and technology parks on tenant firms: A literature review," J. Technol. Transf., vol. 48, pp. 1489–1531, 2023, doi: 10.1007/s10961-022-09949-7.
- [23] I. Oluwole Oladele et al., "Sustainable and Light Weight Cellulose-Based Hybrid Reinforced Epoxy Composites for Automotive Application", Adv. Techn. Mat., vol. 49, no. 2, pp. 1–14, Jun. 2024, doi: 10.24867/ATM-2024-2-001.
- [24] K. G. Hobbs, A. N. Link, and J. T. Scott, "Science and technology parks: An annotated and analytical literature review," J. Technol. Transf., vol. 42, pp. 957–976, 2017, doi: 10.1007/s10961-016-9522-3.
- [25] G. F. Deng, "Dynamic price competition market for retailers in the context of consumer learning behavior and supplier competition: Machine learning-enhanced agent-based modeling and simulation," Adv. Prod. Eng. Manag., vol. 18, no. 4, pp. 434–446, Dec. 2023, doi: 10.14743/apem2023.4.483.
- [26] D. LJ. Bjelica, M. Mihić, K. Kavčič, and D. Gošnik, "Relationship between project success factors, project success criteria and project success in SME: Evidence from selected European transitional economies," Int. J. Ind. Eng. Manag., vol. 14, no. 4, pp. 297–310, 2023, doi: 10.24867/[JIEM-2023-4-340.
- [27] H. Löfsten and P. Lindelöf, "Science parks in Sweden industrial renewal and development?," R&D Manag., vol. 31, no. 3, pp. 309–322, 2002, doi: 10.1111/1467-9310.00219.