

## Presenting a Pathology Model of Human Resource Management System Processes in Science and Technology Parks Affiliated with Universities in Tehran

Mahvash. Khosravi<sup>1\*</sup>, Gholamreza. Shams<sup>2</sup>, Abasalt. Khorasani<sup>2</sup>, Mohammad Sadegh. Khayatian<sup>3</sup>

<sup>1</sup> Ph.D. Student in Higher Education, Faculty of Psychology and Educational Sciences University of Shahid Beheshti University, Tehran, Iran

<sup>2</sup> Associate Professor, Faculty of Education and Psychology, Shahid Beheshti University, Tehran, Iran

<sup>3</sup> Assistant Professor, Institute for Science and Technology Studies, Shahid Beheshti University, Tehran, Iran

\* Corresponding author email address: gh\_shams@sbu.ac.ir

### Article Info

#### Article type:

Original Research

#### How to cite this article:

Khosravi, M., Shams, G., Khorasani, A., & Khayatian, M. S. (2026). Presenting a Pathology Model of Human Resource Management System Processes in Science and Technology Parks Affiliated with Universities in Tehran. *Quarterly Journal of Research and Planning in Higher Education*, 32(2), 69-87.



© 2026 the authors. Published by Institute for Research and Planning in Higher Education (IRPHE), Tehran, Iran. This is an open access article under the terms of the Creative Commons Attribution 4.0 International (CC BY 4.0) License.

### ABSTRACT

Human resource management (HRM) in academic science and technology parks (STPs) plays a vital role in fostering the growth and advancement of these institutions. This study aimed to develop and validate a pathology model of the HRM system processes in STPs affiliated with universities in Tehran. The present research is applied-developmental in purpose and descriptive-survey in data collection methodology. A mixed-methods exploratory research design was employed to achieve the objectives. The participants of the qualitative part comprised HRM experts, managers, and specialists from Tehran's academic STPs, with 12 individuals selected via purposive sampling. The population of quantitative part included managers, deputy managers, and HRM specialists from these STPs, with 96 participants chosen through convenience sampling. Data collection instruments consisted of semi-structured interviews and a researcher-developed questionnaire. Thematic analysis using MAXQDA software was applied for qualitative interview analysis, while partial least squares (PLS) regression via Smart PLS was utilized for quantitative analysis. Findings revealed that the pathology model comprises one primary level: process-related challenges. These include HRM pathologies in: Recruitment and selection, Training, Development, Performance management, Job analysis, Awareness-building and promotion, HR planning. The study concludes that STPs in Tehran universities face systemic HRM challenges, necessitating organizational transformation in this domain. **Keywords:** *Process pathologies, Science and Technology Parks (STPs), Human Resource Management (HRM).*



## Introduction

Science and technology parks (STPs) are key actors in entrepreneurial ecosystems, fostering linkages among universities, industries, and governments (Cadorin, Klofsten, Albahari, & Etzkowitz, 2020). Despite their critical role in innovation and commercialization, human resource management (HRM) in STPs faces multifaceted challenges. This study aims to develop and validate a diagnostic model for HRM process pathologies in university-affiliated STPs in Tehran, identifying gaps and proposing solutions.

## Methodology

This applied-exploratory study adopted a mixed-method (qualitative-quantitative) approach. In the qualitative phase, semi-structured interviews were conducted with 12 HR managers and experts from Tehran's university STPs, analyzed via thematic analysis using MAXQDA. The quantitative phase involved 96 HR staff selected through convenience sampling, with data analyzed via partial least squares structural equation modeling (PLS-SEM) in SmartPLS. A researcher-made questionnaire ensured validity ( $AVE > 0.5$ ) and reliability (Cronbach's  $\alpha > 0.7$ ).

## Findings

1. Qualitative analysis revealed 7 core themes, 18 sub-themes, and 85 codes, categorized into. Recruitment pathologies (biased selection criteria, outdated hiring methods).
2. Training pathologies (poor needs assessment, irrelevant content).
3. Development pathologies (weak teamwork, lack of mentoring).
4. Performance management pathologies (flawed evaluations, inadequate feedback).
5. Job analysis pathologies (vague job descriptions, obsolete methods).
6. Awareness/promotion pathologies (unclear career paths, insufficient onboarding).
7. HR planning pathologies (non-strategic approaches, staffing mismatches).

Quantitative results confirmed the model's robustness, with significant factor loadings (0.518–0.660) and acceptable  $Q^2$  values.

## Conclusion

The study highlights systemic HRM deficiencies in university STPs necessitating: (Poursarrajan et al, 2022, Ferrara et al, 2016).

- Competency-based recruitment and modern hiring practices.
- Needs-aligned training programs with outcome evaluations.
- Enhanced teamwork culture and formal mentoring systems.
- Performance evaluation reforms focusing on results and feedback.
- Updated job analysis frameworks and clear role definitions.
- Strategic HR planning aligned with organizational goals.

This research contributes a theoretical framework for understanding HRM pathologies in STPs and offers practical solutions to enhance their operational efficacy .

## References

- Al-Kfairy, M., & Mellor, R. B. (2023). The role of organisation structure in the success of start-up science and technology parks (STPs). *Knowledge Management Research & Practice*, 21(3), 462-470. <https://doi.org/10.1080/14778238.2020.1838962>

- Albahari, A., Pérez-Canto, S., Barge-Gil, A., & Modrego, A. (2017). Technology parks versus science parks: does the university make the difference? *Technological Forecasting and Social Change*, 116, 13-28. <https://doi.org/10.1016/j.techfore.2016.11.012>
- Askari Malsheikh, A. (2014). *Pathology of science and technology parks in Iran from the experts' point of view, a case study of Fars science and technology park* Allameh Tabataba'i University].
- Cadorin, E., Klofsten, M., Albahari, A., & Etkowitz, H. (2020). Science Parks and the attraction of talents: Activities and challenges. *Triple Helix*, 6(1), 36-68. <https://doi.org/10.1163/21971927-00601002>
- Cadorin, E., Klofsten, M., & Löfsten, H. (2021). Science Parks, talent attraction and stakeholder involvement: an international study. *The Journal of Technology Transfer*, 46, 1-28. <https://doi.org/10.1007/s10961-019-09753-w>
- Dabrowskade, J., & de Faria, A. F. (2020). Performance measures to assess the success of contemporary science parks. *Triple Helix*, 7(1), 40-82. <https://doi.org/10.1163/21971927-BJA10006>
- DeGeest, D. S., Follmer, E. H., Walter, S. L., & O'Boyle, E. H. (2017). Retracted: The benefits of benefits: A dynamic approach to motivation-enhancing human resource practices and entrepreneurial survival. *Journal of Management*, 43(7), 2303-2332. <https://doi.org/10.1177/0149206315569313>
- Eryilmaz, M. (2018). Aphasia as an Organizational Pathology: Taking Some Lessons from Aphasia in Neurology. *Annals Constantin Brancusi U. Targu Jiu, Letters & Soc. Sci. Series*, 13. [https://heionline.org/hol/cgi-bin/get\\_pdf.cgi?handle=hein.journals/ancnbt2018&section=31](https://heionline.org/hol/cgi-bin/get_pdf.cgi?handle=hein.journals/ancnbt2018&section=31)
- Evans, G., & Keogh, W. (2004). Issues in human resource development and the pressures faced by science park-based NTBFs. *International Journal of Human Resources Development and Management*, 4(2), 128-143. <https://doi.org/10.1504/IJHRDM.2004.004711>
- Farahi Bozanjani, B., Soltani, M. R., & Samavati, M. H. (2012). Pathology of the selection system in governmental organizations of the Islamic Republic of Iran. *Human Resource Management Research*, 4(2), 83-111.
- Ferrara, M., Lamperti, F., & Mavilia, R. (2016). Looking for best performers: a pilot study towards the evaluation of science parks. *Scientometrics*, 106, 717-750. <https://doi.org/10.1007/s11192-015-1804-2>
- Guba, E. G., & Lincoln, Y. S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Ectj*, 30(4), 233-252. <https://doi.org/10.1007/BF02765185>
- Gursel, A. (2014). Science and technology parks and university collaborations. *Periodicals of Engineering and Natural Sciences (PEN)*, 2(2). <https://doi.org/10.21533/pen.v2i2.41>
- Henriques, I. C., Sobreiro, V. A., & Kimura, H. (2018). Science and technology park: Future challenges. *Technology in Society*, 53, 144-160. <https://doi.org/10.1016/j.techsoc.2018.01.009>
- Hobbs, K. G., Link, A. N., & Scott, J. T. (2017). Science and technology parks: an annotated and analytical literature review. *Journal of Technology Transfer*, 42, 957-976. <https://doi.org/10.1007/s10961-016-9522-3>
- Javdankherad, R., & Yarahmadi, M. (2024). Pathology of the Human Resources System in Long-term National Programs: A Comparative Study between the First and Second Plans Based on Operational Factors. *International Journal of Innovation Management and Organizational Behavior (IJIMOB)*, 4(2), 133-141. <https://doi.org/10.61838/kman.ijimob.4.2.16>
- Jimenez-Zarco, A. I., Cerdan-Chiscano, M., & Torrent-Sellens, J. (2013). Challenges and Opportunities in Science Parks' Management: design of a tool based on the analysis of resident companies. *Revista Brasileira de Gestão de Negócios*, 15, 362-389. <https://doi.org/10.7819/rbgn.v15i48.1503>
- Kakaei, H., Abdollahnia, H., Alipour, F., & Derisi, K. (2021). The impact of human resource management activities on employee performance in knowledge-based companies at the University of Tehran Science and Technology Park. The 4th Annual International Conference on New Developments in Management, Economics, and Accounting,
- Keeble, D. (2001). *University and technology: Science and technology parks in the Cambridge region*. Centre for Business Research, University of Cambridge.
- Lecluyse, L., Knockaert, M., & Spithoven, A. (2019). The contribution of science parks: A literature review and future research agenda. *The Journal of Technology Transfer*, 44, 559-595. <https://doi.org/10.1007/s10961-018-09712-x>
- Löfsten, H., & Klofsten, M. (2024). Exploring dyadic relationships between Science Parks and universities: bridging theory and practice. *The Journal of Technology Transfer*, 49, 1914-1934. <https://doi.org/10.1007/s10961-024-10064-y>
- Löfsten, H., Klofsten, M., & Cadorin, E. (2020). Science Parks and talent attraction management: university students as a strategic resource for innovation and entrepreneurship. *European Planning Studies*, 28(12), 2465-2488. <https://doi.org/10.1080/09654313.2020.1722986>
- Mandegary, A., & Koulak, A. (2020). Investigating the effect of strategic human resource management on organizational performance of employees Case study: Persepolis Pars Assaluyeh Petrochemical. *Journal of Advertising and Sales Management (Approach to Business Management)*, 1(3), 117-138. [https://www.sid.ir/fa/VEWSSID/J\\_pdf/10010213990306.pdf](https://www.sid.ir/fa/VEWSSID/J_pdf/10010213990306.pdf)
- Mirahmadi, K., Korasani, A., Nazarpour, M. T., & Shams Mourkan, G. I. (2022). A Synthetic Analysis of the Problems of Iran's Human Resources Performance Appraisal System; Designing A Model. *Journal of Research in Human Resources Management*, 14(1), 199-243. <https://www.academia.edu/download/99426932/7.pdf>
- Mulvaney, M., & Hurd, A. (2015). Human resource management in parks and recreation. *Journal of Park and Recreation Administration*, 33(1), 16-20. <https://go.gale.com/ps/i.do?id=GALE%7CA426149173&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=07351968&p=AON E&sw=w>
- Naghdi, M., Shahtalebi, B., & Nadi, M. (2023). Identifying the components of education and human capital development in the transition from the traditional university to the future university by mixed method. *Quarterly Journal of Research and Planning in Higher Education*, 26(1), 51-75. [https://journal.irphe.ac.ir/article\\_702993\\_en.html](https://journal.irphe.ac.ir/article_702993_en.html)
- Namdari Pejman, M. (2024). Pathology of teacher recruitment and selection processes and providing policy recommendations for its improvement. *Quarterly Journal of Research and Planning in Higher Education*, 30(1), 94-112. <https://doi.org/10.61838/kman.irphe.30.1.6>
- Poonjan, A., & Tanner, A. N. (2020). The role of regional contextual factors for science and technology parks: a conceptual framework. *European Planning Studies*, 28(2), 400-420. <https://doi.org/10.1080/09654313.2019.1679093>



- Poursarrajian, D., Taslimi, M. S., Mashayekhi, A., Haji Gholam Saryazdi, A., & Soltani, M. (2022). Dynamics Analysis of the Support System in the Structure of Human Resources of Iranian Science and Technology Parks. *Journal of Strategic Management Studies*, 13(50), 247-269. <https://doi.org/10.22034/smsj.2022.152223>
- Pourserajian, D., Taslimi, M. S., Amiri, M., & Mashayekhi, A. (2019). Presenting an Interactive Model of Human Resources Management in Iran's Science and Technology Parks with an Emphasis on the System Dynamics Approach. *Strategy*, 28(1), 35-58. [https://rahbord.csr.ir/article\\_117595\\_en.html](https://rahbord.csr.ir/article_117595_en.html)
- Ravanpaikar, Y., Zamanimoghadam, A., Sajadijaghargh, S. A., Hashemi, S. A., & Amini Sabegh, Z. (2022). Strategic Pathology of Human Resource Management System Based on International Competency Policies in the National Company of Southern Oilfields. *Public Policy In Administration*, 13(45), 51-71.
- Ribeiro, J., Higuchi, A., Bronzo, M., Veiga, R., & de Faria, A. (2016). A framework for the strategic management of science & technology parks. *Journal of Technology Management & Innovation*, 11(4), 80-90. <https://doi.org/10.4067/S0718-27242016000400011>
- Safari, A., Farokhi, M., & Salehzadeh, R. (2015). Pathology of human resource management systems. *Human Resource Management Research*, 7(1), 83-111. [https://www.journal-aprie.com/article\\_140204\\_d92f47d30274c682527a90cf5b3a2b8b.pdf](https://www.journal-aprie.com/article_140204_d92f47d30274c682527a90cf5b3a2b8b.pdf)
- Salimi, E., Mirsepasi, N., & Daneshfard, K. A. (2022). A Pathology of the Human Resources Management System in the Ministry of Education and Ways to Improve the System (A Quantitative Study). *Quarterly Journal of Education*, 38(3), 67-84. [http://qjoe.ir/browse.php?a\\_id=1319&slc\\_lang=en&sid=1&printcase=1&hbnr=1&hmb=1](http://qjoe.ir/browse.php?a_id=1319&slc_lang=en&sid=1&printcase=1&hbnr=1&hmb=1)
- Shajie, K., Talebpour, M., Alimardani, M., & Eskandari, M. (2021). Presenting the pathology model of human capital of the Football Federation of Iran. *Organizational Behavior Management in Sport Studies*, 8(1), 99-113. [https://fmss.journals.pnu.ac.ir/article\\_7977\\_en.html?lang=fa](https://fmss.journals.pnu.ac.ir/article_7977_en.html?lang=fa)
- Siegel, D. S., Westhead, P., & Wright, M. (2003). Assessing the impact of university science parks on research productivity: exploratory firm-level evidence from the United Kingdom. *International journal of industrial organization*, 21(9), 1357-1369. [https://doi.org/10.1016/S0167-7187\(03\)00086-9](https://doi.org/10.1016/S0167-7187(03)00086-9)
- Skowron-Grabowska, B. (2020). Management of science and technology parks in terms of innovative aspects. *Management and Production Engineering Review*, 11(4), 56-67. <https://doi.org/10.24425/mper.2020.136120>
- Stanković, I., & Gocić, M. (2009). Human resources management as a base for foundation of science and technology parks. *Tehnika-Menadžment*, 59(4), 13-16. <https://scindeks.ceon.rs/article.aspx?artid=1450-99110904013S>
- Taheriattar, G., & Rostamlou, R. (2018). Investigating the Impact of Human Resources Management Functions on Creativity, Product Innovation and Process Innovation (Case Study: Knowledge-Based Companies Based in Science and Technology Park of University of Tehran). *Innovation Management Journal*, 7(2), 47-68. [https://www.nowavari.ir/article\\_86890\\_bd57eb79c59aafc532a1a73d43a02840.pdf](https://www.nowavari.ir/article_86890_bd57eb79c59aafc532a1a73d43a02840.pdf)
- Walsh, J. P., Lee, Y. N., & Tang, L. (2019). Pathogenic organization in science: Division of labor and retractions. *Research Policy*, 48(2), 444-461. <https://doi.org/10.1016/j.respol.2018.09.004>
- Xiong, Y., & Li, S. (2022). Can the establishment of university science and technology parks promote urban innovation? Evidence from China. *Sustainability*, 14(17), 10707. <https://doi.org/10.3390/su141710707>
- Yang, W. T., & Lee, W. H. (2000). A study on management performance of Taiwan high technology industry-the Hsinchu Science Park experience. *Journal of Information and Optimization Sciences*, 21(1), 19-44. <https://doi.org/10.1080/02522667.2000.10699435>
- Zeraatkar, S., Rajabi Farjad, H., & Naghashzadeh, S. (2021). Exploration of the Challenges of Human Resource Management in the Public Sector and Their Effects on Productivity. *Journal of Research in Human Resources Management*, 12(4), 197-224. <https://www.ensani.ir/file/download/article/1613455007-10007-42-6.pdf>