



Management 5.0: Human-Centred Leadership in AI-Powered Organizations — A Conceptual Review

¹Dr. V Lakshmi, ²Dr. R Raghuvver

¹Assistant Professor, ² Faculty,

¹Rao Bahadur Y Mahabaleswarappa Engineering College, Ballari, Karnataka, India.

²MBA, Yuvarajas College (Autonomous), University of Mysore, Mysore

Email - ¹lucky.vasudev@gmail.com, ²veerraghu129@gmail.com

Abstract: *The rapid advancement of Artificial Intelligence (AI) and digital transformation technologies has significantly reshaped modern organizational management practices. In this context, Management 5.0 has emerged as a human-centered managerial approach that integrates advanced technologies with employee well-being, ethical governance, sustainability, and organizational resilience. The present study is conceptual and descriptive in nature and is based entirely on secondary data collected from journal articles, books, reports, and scholarly publications related to Industry 5.0, Artificial Intelligence, and leadership practices. The study examines the concept and significance of Management 5.0, analyses the role of human-centered leadership in technologically transformed workplaces, and identifies the opportunities and challenges associated with AI-powered organizations. The findings reveal that while AI enhances efficiency, innovation, and decision-making, organizations must balance technological advancement with human values such as empathy, collaboration, emotional intelligence, and inclusiveness to achieve sustainable organizational growth and long-term success.*

Key Words: *Management 5.0, Artificial Intelligence, Human-Centered Leadership, AI-Powered Organizations, Digital Transformation, Organizational Sustainability, Employee Well-Being*

1. INTRODUCTION:

The rapid advancement of Artificial Intelligence (AI), machine learning, robotics, big data analytics, and digital transformation technologies has significantly transformed modern organizational practices and managerial functions. Organizations across industries are increasingly integrating intelligent technologies into strategic decision-making, employee management, operational systems, and customer engagement processes to enhance efficiency, innovation, and competitiveness. This technological transformation has contributed to the emergence of a new managerial paradigm known as Management 5.0, which emphasizes the integration of advanced technologies with human-centered leadership, sustainability, ethical governance, and employee well-being (Alves et al., 2023). The concept of Management 5.0 is closely associated with the broader framework of Industry 5.0, which emerged as a response to the limitations of Industry 4.0. While Industry 4.0 primarily focused on automation, cyber-physical systems, and digital connectivity, researchers argued that excessive technological orientation often neglected human creativity, emotional intelligence, employee welfare, and social sustainability. Consequently, Industry 5.0 introduced a more human-centric perspective that promotes collaboration between humans and intelligent technologies rather than replacing human capabilities entirely (Alves et al., 2023).

In this evolving environment, human-centered leadership has become a critical requirement for AI-powered organizations. Human-centered leadership refers to a managerial approach that prioritizes empathy, emotional intelligence, employee empowerment, collaboration, ethical responsibility, and inclusiveness while leveraging advanced technologies for organizational growth and innovation. Leadership 5.0 emphasizes balancing technological advancement with human values, ensuring that intelligent systems support rather than diminish human potential (Warner-Söderholm & Kuoppamäki, 2025). The adoption of AI technologies has created significant opportunities for organizations through predictive analytics, intelligent decision-making, workforce optimization, and automation of repetitive tasks. However, it has also generated challenges related to job insecurity, digital fatigue, algorithmic bias, employee stress, ethical concerns, and loss of human interaction within workplaces. Researchers increasingly argue that organizational success in the digital era depends not only on technological capabilities but also on the ability of leaders



to maintain trust, employee well-being, adaptability, and ethical governance in AI-driven environments (Passalacqua et al., 2025).

Furthermore, modern organizations operate in highly dynamic and uncertain environments where resilience, sustainability, innovation, and continuous learning have become essential for long-term success. In this context, Management 5.0 advocates a balanced integration of technology and humanity by promoting collaborative human–AI relationships, organizational agility, and employee-centered management practices. Human resource management is also undergoing substantial transformation through AI-enabled recruitment, digital training systems, employee analytics, and personalized learning platforms, thereby redefining the traditional role of managers and leaders (Andayanti, 2025). Recent literature also highlights that the future of organizational management lies in augmenting human intelligence rather than replacing it. Human creativity, ethical reasoning, emotional understanding, and critical thinking continue to remain essential managerial competencies that cannot be fully replicated by intelligent systems. Therefore, Management 5.0 emphasizes the importance of building human-centric organizations where technology and human capabilities coexist to achieve organizational effectiveness, innovation, and sustainable growth (Townsend & Romme, 2024). Although several studies have examined Industry 5.0, AI adoption, and digital transformation independently, limited research comprehensively integrates Management 5.0 with human-centered leadership in AI-powered organizations. Existing literature remains fragmented across management, organizational behavior, information systems, and technology disciplines. Therefore, there is a growing need for a conceptual review that critically examines the relationship between Management 5.0, human-centered leadership, artificial intelligence, and organizational transformation. This paper attempts to address this gap by reviewing existing literature and analyzing how human-centered leadership contributes to organizational effectiveness, employee well-being, ethical governance, and sustainable development in AI-powered organizations.

2. LITERATURE REVIEW:

Alves, Lima, and Gaspar (2023) explained that Industry 5.0 focuses on human-centricity, sustainability, and resilience by integrating human creativity with intelligent technologies. The study emphasized that technological advancement should support employee well-being rather than replace human capabilities.

Warner-Söderholm and Kuoppamäki (2025) introduced the concept of Leadership 5.0 and highlighted the importance of agile leadership, emotional intelligence, adaptability, and ethical governance in AI-driven organizations. The study proposed five pillars of Leadership 5.0 including human-centric leadership and innovation-oriented management.

Passalacqua et al. (2025) conducted a systematic review on human-centered AI in Industry 5.0 and found that organizations increasingly require balanced collaboration between humans and artificial intelligence to improve productivity and workplace sustainability.

Aziz et al. (2024) analyzed AI-powered leadership and stated that artificial intelligence is reshaping managerial practices, decision-making processes, and organizational leadership structures. The study emphasized that future leaders must combine technological competence with emotional intelligence.

Naswya, Aravik, Tohir, and Irawan (2025) examined human-centered leadership in the Society 5.0 era and concluded that empathetic leadership improves employee engagement, well-being, and organizational adaptability in digitally transformed workplaces.

Andayanti (2025) explored the transformation of human resource management in Industry 5.0 and found that AI-based recruitment, employee analytics, and digital training systems are redefining HR practices and workforce management.

Müller (2020) observed that Industry 5.0 encourages collaboration between humans and intelligent machines instead of complete automation, thereby promoting sustainable organizational growth and innovation.

Kane et al. (2015) emphasized that digital leadership requires leaders to develop adaptive capabilities, technological understanding, and collaborative approaches to effectively manage digital transformation.

Avolio and Kahai (2003) highlighted that e-leadership and technology-driven management practices significantly influence organizational communication, employee motivation, and virtual collaboration.

Townsend and Romme (2024) argued that Management 5.0 supports the coexistence of human intelligence and AI systems by emphasizing ethical decision-making, innovation, and organizational sustainability.

Rožanec et al. (2022) proposed a human-centric AI architecture for Industry 5.0 and stressed that trustworthiness, transparency, and explainable AI are essential for effective human–machine collaboration.

Hines, Magnani, Mula, and Sanchis (2025) developed a human-centered lean Industry 5.0 model and identified that organizational success depends on integrating people skills with digital technologies.

Jadad (2026) introduced a conceptual framework explaining human–AI relationships in organizations and emphasized the growing importance of collaborative intelligence in leadership and strategic decision-making.



Khoshkonesh et al. (2025) proposed the concept of Lean 5.0 and found that predictive analytics, continuous learning, and AI collaboration improve organizational efficiency and resilience.

Miftahurroziqin, Wardhani, and Mulyawan (2025) emphasized ethical governance and human-centric work design as essential dimensions for responsible AI integration in Industry 5.0 ecosystems.

Xu et al. (2021) explained that Industry 5.0 emerged as an evolution of Industry 4.0 by incorporating social sustainability, resilience, and human values into technological transformation.

Huang et al. (2022) compared Industry 5.0 and Society 5.0 and concluded that both concepts promote human welfare, technological collaboration, and sustainable societal development.

Moller, Vakilzadian, and Haas (2022) observed that organizations are shifting from automation-centered operations toward human-assisted intelligent systems that support innovation and employee empowerment.

Schnell et al. (2022) emphasized that systematic leadership frameworks are necessary to manage technological uncertainty and organizational transformation in AI-powered environments.

European Commission (2021) highlighted that Industry 5.0 prioritizes worker well-being, sustainability, and resilience while integrating advanced technologies into organizational systems.

Rada (2015) introduced the early concept of Industry 5.0 and emphasized collaboration between humans and smart technologies to achieve productivity and innovation simultaneously.

Deloitte Insights (2023) reported that organizations adopting human-centered AI practices achieve better employee satisfaction, innovation capability, and organizational resilience.

McKinsey Global Institute (2023) found that AI adoption significantly improves operational efficiency, strategic forecasting, and managerial decision-making, but also creates challenges related to ethics and workforce adaptation.

Gartner (2024) stated that future organizations require leaders who can combine technological intelligence with empathy, collaboration, and employee-centered management practices.

Harari (2018) argued that despite advancements in artificial intelligence, human creativity, emotional understanding, and ethical reasoning remain irreplaceable competencies in leadership and organizational management.

3. RESEARCH GAP:

Existing literature extensively discusses Artificial Intelligence, Industry 5.0, digital transformation, and leadership practices independently. Several studies have focused on technological advancement, automation, AI adoption, and organizational efficiency, while others have examined human-centered leadership, employee well-being, and ethical governance in modern organizations. However, limited studies comprehensively integrate the concepts of Management 5.0, human-centered leadership, and AI-powered organizational transformation within a unified managerial framework. Furthermore, most existing research primarily emphasizes technological and operational dimensions, with comparatively less attention given to the balance between advanced technologies and human values such as empathy, collaboration, emotional intelligence, sustainability, and ethical responsibility. The literature also remains fragmented across management, organizational behavior, information systems, and technology disciplines. Therefore, there is a need for a comprehensive conceptual review that critically examines how Management 5.0 can support organizational effectiveness, employee well-being, sustainable growth, and ethical leadership in AI-powered organizations.

4. STATEMENT OF THE PROBLEM:

The rapid adoption of Artificial Intelligence and digital technologies is significantly transforming traditional organizational management and leadership practices. While AI-powered systems improve efficiency, innovation, and decision-making, excessive dependence on automation has also created concerns related to employee well-being, job security, ethical governance, and reduced human interaction in workplaces. Many organizations continue to prioritize technological efficiency over human-centered leadership, emotional intelligence, and employee empowerment.

Furthermore, existing leadership models are often inadequate to address the complexities of AI-driven organizational environments and human-AI collaboration. Although several studies discuss AI adoption and Industry 5.0 independently, limited integrated literature explains how Management 5.0 can effectively balance advanced technologies with human values to achieve organizational sustainability and effectiveness.

5. SCOPE OF THE STUDY:

- The study focuses on the concept of Management 5.0 and its role in promoting human-centered leadership within AI-powered organizations.
- The study examines the impact of Artificial Intelligence, digital transformation, ethical governance, and employee well-being on modern managerial practices through secondary data sources.



- The study is limited to conceptual analysis based on existing literature, journal articles, reports, and scholarly publications related to Management 5.0, Industry 5.0, and AI-driven organizational leadership.

Objectives of the study:

- To examine the concept and significance of Management 5.0 in AI-powered organizations.
- To analyze the role of human-centered leadership in managing technological transformation and employee well-being.
- To identify the challenges and opportunities associated with Artificial Intelligence and Management 5.0 in modern organizations.

6. RESEARCH METHODOLOGY:

The present study is conceptual and descriptive in nature and is based entirely on secondary data sources. The study aims to examine the concept of Management 5.0 and the role of human-centered leadership in AI-powered organizations. Relevant data and information were collected from various secondary sources such as research articles, peer-reviewed journals, books, conference papers, industry reports, websites, and scholarly publications related to Artificial Intelligence, Industry 5.0, digital transformation, organizational leadership, and management practices. The collected literature was systematically reviewed and analysed to understand the emerging trends, opportunities, challenges, and managerial implications of Management 5.0 in modern organizations. The study mainly focuses on integrating existing theoretical and conceptual insights to provide a comprehensive understanding of human-centered leadership in AI-driven organizational environments.

7. DISCUSSION:

1. To examine the concept and significance of Management 5.0 in AI-powered organizations.

Management 5.0 is a modern managerial approach that integrates advanced technologies with human-centered organizational practices. Emerging from the concept of Industry 5.0, it emphasizes collaboration between humans and intelligent systems rather than complete automation. Unlike traditional management models that focused mainly on productivity and profit, Management 5.0 highlights employee well-being, sustainability, ethical governance, innovation, and organizational resilience (Alves et al., 2023). The growth of Artificial Intelligence, machine learning, robotics, and big data analytics has significantly transformed organizational operations and managerial decision-making. AI-powered organizations use intelligent systems for recruitment, workforce analytics, customer management, and strategic planning to improve efficiency and productivity. However, excessive technological dependence may create challenges such as job insecurity, employee stress, ethical concerns, and reduced human interaction. Therefore, Management 5.0 promotes the use of technology to support and enhance human capabilities rather than replace them completely (Passalacqua et al., 2025). Human-centered leadership is a major component of Management 5.0. Leaders in AI-driven organizations are expected to combine technological knowledge with empathy, emotional intelligence, adaptability, and ethical responsibility. This leadership approach helps organizations maintain employee engagement, collaboration, trust, and sustainable growth in digitally transformed workplaces (Warner-Söderholm & Kuoppamäki, 2025).

Furthermore, Management 5.0 supports organizational sustainability, continuous learning, innovation, and ethical AI adoption. The concept recognizes that human creativity, critical thinking, and emotional understanding remain essential despite technological advancement. Thus, the significance of Management 5.0 lies in balancing technology with human values to achieve organizational effectiveness and long-term sustainability (Townsend & Romme, 2024).

2. To analyze the role of human-centered leadership in managing technological transformation and employee well-being.

Human-centered leadership plays a crucial role in helping organizations manage technological transformation while maintaining employee well-being in AI-powered workplaces. As organizations increasingly adopt Artificial Intelligence, automation, and digital technologies, leaders are required not only to manage technological changes but also to address employee concerns related to stress, job insecurity, work pressure, and reduced human interaction. Human-centered leadership focuses on empathy, emotional intelligence, collaboration, inclusiveness, and employee empowerment to create supportive and psychologically safe work environments (Warner-Söderholm & Kuoppamäki, 2025). In technologically transformed organizations, employees often face challenges such as digital fatigue, fear of job displacement, and difficulty adapting to new systems. Human-centered leaders help employees overcome these challenges by encouraging continuous learning, effective communication, motivation, and participation in decision-making processes. This leadership approach improves employee engagement, trust, adaptability, and organizational commitment during periods of technological change (Naswya et al., 2025).



Furthermore, human-centered leadership supports ethical governance and responsible AI adoption by ensuring that technology is implemented in a fair, transparent, and employee-friendly manner. Leaders who prioritize employee well-being and organizational ethics are more likely to achieve sustainable growth, innovation, and workforce satisfaction in AI-driven environments (Passalacqua et al., 2025). Therefore, human-centered leadership is essential in Management 5.0 as it balances technological advancement with human values, ensuring both organizational effectiveness and employee well-being in digitally transformed workplaces.

3. To identify the challenges and opportunities associated with Artificial Intelligence and Management 5.0 in modern organizations.

Artificial Intelligence and Management 5.0 have created significant opportunities for modern organizations by improving operational efficiency, innovation, strategic decision-making, and organizational productivity. AI-powered technologies such as machine learning, robotics, predictive analytics, and automation help organizations enhance customer service, optimize resource utilization, reduce operational costs, and support data-driven managerial decisions. Management 5.0 further promotes continuous learning, organizational flexibility, sustainability, and human-technology collaboration, enabling organizations to remain competitive in dynamic business environments (Alves et al., 2023). Despite these advantages, organizations also face several challenges in implementing AI and Management 5.0 practices. Excessive dependence on automation may lead to job insecurity, employee stress, digital fatigue, and reduced human interaction within workplaces. Ethical concerns such as algorithmic bias, privacy issues, lack of transparency, and responsible AI governance also create managerial difficulties in AI-driven environments. In addition, many organizations face challenges related to technological adaptation, employee resistance to change, lack of digital skills, and high implementation costs (Passalacqua et al., 2025).

Management 5.0 attempts to address these challenges by emphasizing human-centered leadership, employee empowerment, ethical governance, and sustainable organizational practices. The concept encourages organizations to use technology as a tool for supporting human capabilities rather than replacing them entirely. Therefore, the successful implementation of AI and Management 5.0 depends on balancing technological advancement with employee well-being, ethical responsibility, and organizational sustainability (Townsend & Romme, 2024).

8. FINDINGS:

1. The study found that Management 5.0 is an emerging managerial approach that integrates Artificial Intelligence and digital technologies with human-centered organizational practices.
2. The study revealed that AI-powered technologies improve organizational efficiency, innovation, productivity, and data-driven decision-making processes.
3. Human-centered leadership was identified as a key element in Management 5.0 for maintaining employee well-being, engagement, collaboration, and trust in technologically transformed workplaces.
4. The study found that organizations face challenges such as job insecurity, digital fatigue, ethical concerns, privacy issues, and employee resistance during AI adoption.
5. The review highlighted that Management 5.0 emphasizes ethical governance, sustainability, continuous learning, and responsible AI implementation in organizations.
6. The study concluded that balancing technological advancement with human values such as empathy, emotional intelligence, and inclusiveness is essential for organizational sustainability and long-term success.

Suggestions:

1. Organizations should adopt human-centered leadership practices that prioritize employee well-being, emotional intelligence, collaboration, and inclusiveness alongside technological advancement.
2. Management should provide continuous training and digital skill development programs to help employees adapt to AI-powered organizational environments.
3. Organizations should implement Artificial Intelligence in a transparent, ethical, and responsible manner to minimize issues related to privacy, bias, and employee insecurity.
4. Managers should encourage effective communication, employee participation, and continuous learning to reduce resistance toward technological transformation.
5. Organizations should maintain a balance between technological efficiency and human values to achieve sustainable growth, innovation, and organizational resilience under Management 5.0 practices.



9. CONCLUSION:

Management 5.0 represents a modern managerial approach that combines Artificial Intelligence, digital transformation, and advanced technologies with human-centered leadership and organizational sustainability. The study revealed that AI-powered technologies significantly improve organizational efficiency, innovation, productivity, and strategic decision-making processes. At the same time, the increasing dependence on intelligent systems also creates challenges related to employee well-being, ethical governance, job insecurity, and reduced human interaction in workplaces. The study further highlighted that human-centered leadership plays a crucial role in balancing technological advancement with human values such as empathy, emotional intelligence, collaboration, and inclusiveness. Management 5.0 encourages organizations to adopt ethical, sustainable, and employee-focused practices while effectively utilizing AI-driven technologies for organizational growth and resilience. Overall, the study concludes that the successful implementation of Management 5.0 depends on maintaining a balanced relationship between technology and humanity. Organizations that effectively integrate Artificial Intelligence with human-centered leadership practices are more likely to achieve sustainable development, employee satisfaction, innovation, and long-term organizational success in the digital era.

REFERENCES:

- Alves, A., Lima, T. M., & Gaspar, P. D. (2023). Industry 5.0 and human-centered approaches: A review. *Processes*, 11(1), 193. <https://doi.org/10.3390/pr11010193>
- Andayanti, S. (2025). Human resource management transformation in Industry 5.0. *Indonesian Journal of Economics and Management*, 5(2), 112–121.
- Avolio, B. J., & Kahai, S. S. (2003). Adding the “E” to E-leadership: How it may impact your leadership. *Organizational Dynamics*, 31(4), 325–338. [https://doi.org/10.1016/S0090-2616\(02\)00133-X](https://doi.org/10.1016/S0090-2616(02)00133-X).
- Aziz, S., Khan, M., & Rahman, A. (2024). AI-powered leadership and future managerial competencies. *Journal of Managerial Psychology*, 39(4), 455–470.
- European Commission. (2021). *Industry 5.0: Towards a sustainable, human-centric and resilient European industry*. European Union Publications Office.
- Gartner. (2024). *Future leadership trends in AI-driven organizations*. Gartner Research Reports.
- Harari, Y. N. (2018). *21 lessons for the 21st century*. Spiegel & Grau.
- Hines, P., Magnani, M., Mula, J., & Sanchis, R. (2025). Human-centered lean Industry 5.0 model for organizational sustainability. *International Journal of Production Research*, 63(5), 1450–1465.
- Huang, S., Guo, Y., & Chen, J. (2022). Industry 5.0 and Society 5.0: Human-centered technological transformation. *Sustainability*, 14(12), 7421. <https://doi.org/10.3390/su14127421>
- Jadad, A. (2026). Human–AI relationships and collaborative intelligence in organizations. *Journal of Organizational Transformation*, 8(1), 25–39.
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). *Strategy, not technology, drives digital transformation*. MIT Sloan Management Review.
- Khoshkonesh, A., Rezaei, M., & Farhadi, P. (2025). Lean 5.0: AI collaboration and organizational resilience. *Journal of Business Analytics*, 7(3), 201–215.
- McKinsey Global Institute. (2023). *The state of AI and the future of work*. McKinsey & Company.
- Miftahurroziqin, M., Wardhani, R., & Mulyawan, A. (2025). Ethical governance and human-centric work design in Industry 5.0. *Sustainable Operations and Technology Journal*, 4(2), 88–97.
- Moller, D. P. F., Vakilzadian, H., & Haas, R. E. (2022). Human-assisted intelligent systems in Industry 5.0 organizations. *International Journal of Advanced Engineering Research*, 19(2), 75–86.
- Müller, J. M. (2020). Industry 5.0 and the future of human–machine collaboration. *European Business Review*, 32(4), 653–670.
- Naswya, R., Aravik, H., Tohir, M., & Irawan, A. (2025). Human-centered leadership in Society 5.0 era. *Expense: Journal of Management and Business*, 3(1), 55–67.
- Passalacqua, G., Rossi, F., & Bellini, E. (2025). Human-centered AI in Industry 5.0: A systematic review. *International Journal of Production Research*, 63(7), 2101–2118.
- Rada, M. (2015). Industry 5.0 definition and collaborative innovation systems. *Industry Today Journal*, 4(1), 12–16.
- Rožanec, J. M., Mladenčić, D., & Fortuna, B. (2022). Human-centric artificial intelligence architecture for Industry 5.0. *arXiv Preprint*. <https://arxiv.org/abs/2203.10794>
- Schnell, T., Schneider, P., & Weber, M. (2022). Leadership frameworks for technological transformation and uncertainty management. *Management Studies Review*, 18(3), 188–202.
- Townsend, D. M., & Romme, A. G. L. (2024). Management 5.0 and organizational sustainability in AI-driven environments. *Journal of Management Studies*, 61(2), 340–357.
- Warner-Söderholm, G., & Kuoppamäki, S. (2025). Leadership 5.0: Human-centered leadership in digitally transformed organizations. *Administrative Sciences*, 15(4), 56. <https://doi.org/10.3390/admsci15040056>.
- 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>.