AG EDITOR

REVIEW

Digital Innovation as a Catalyst for Enhancing Organizational Agility in Rapidly Changing Business Environments

La innovación digital como catalizador para mejorar la agilidad organizacional en entornos empresariales en rápida evolución

Hemanth Kumar V[1] ✉, Lavanya M[2] ✉, Parag Amin[3] ✉, Varalakshmi S[4] ✉, Dikshit Sharma[5] ✉, Pradeep Kumar Shinde[6] ✉, Sasmita Pattnaik[7] ✉, Abhishek Upadhyay[8] ✉

[1]School of Commerce, Presidency University, Bangalore, India.

[2]Master of Business Administration, Sathyabama Institute of Science and Technology, Chennai, India.

[3]Department of ISME, ATLAS SkillTech University, Mumbai, India.

[4]Department of Management, Jain (Deemed to be University), Bangalore, Karnataka, India.

[5]Centre of Research Impact and Outcome, Chitkara University, Rajpura- 140417, Punjab, India.

[6]Department of Commerce, Presidency Collge, Bengaluru, India.

[7]Department of Management, Institute of Business and Computer Studies, Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar, Odisha, India.

[8]Department of Management, Arka Jain University, Jamshedpur, Jharkhand, India.

ABSTRACT

Introduction: in today's fast-changing corporate market, Organizational Agility (OA) is critical to success. Digital innovation is essential for enabling businesses to respond promptly to changing market conditions and technological advancements. By incorporating digital technologies, businesses improves their flexibility, responsiveness, and competitiveness.

Objective: this research seeks to investigate how digital innovation helps OA in quickly changing corporate environments. The research examines the impact of emerging technologies such as artificial intelligence (AI), cloud computing, and the Internet of Things (IoT) on organizational flexibility and responsiveness.

Method: this research involves a detailed examination of existing studies that focus on howdigital technology is integrated into organizational frameworks. This research identified significant strategies, themes, and insights into how digital innovations drive organizational agility, such as the roles of leadership, culture, and technical adoption.

Results: the findings show that digital innovation improves organizational agility by automating procedures, allowing for real-time decision-making, and increasing data-driven insights. AI and IoT enable faster response times, more consumer engagement, and more efficient operations.

Conclusion: digital innovation is a crucial enabler of organizational agility, providing the tools necessary to adapt to rapidly changing environments. Fully leveraging the benefits of digital transformation requires organizations must align digital strategies with leadership approaches and foster a culture of continuous learning and adaptability.

Keywords: Digital Innovation; Organizational Agility; Leadership Approaches; Digital Transformation.

RESUMEN

Introducción: en el cambiante mercado corporativo actual, la Agilidad Organizacional (OA) es fundamental para el éxito. La innovación digital es esencial para que las empresas respondan con prontitud a las condiciones cambiantes del mercado y a los avances tecnológicos. Al incorporar tecnologías digitales, las empresas mejoran su flexibilidad, capacidad de respuesta y competitividad.

Objetivo: esta investigación busca investigar cómo la innovación digital facilita la OA en entornos corporativos en constante evolución. La investigación examina el impacto de tecnologías emergentes como la inteligencia artificial (IA), la computación en la nube y el Internet de las Cosas (IdC) en la flexibilidad y la capacidad de respuesta organizacional.

Método: esta investigación implica un análisis detallado de estudios existentes que se centran en cómo la tecnología digital se integra en los marcos organizacionales. Esta investigación identificó estrategias, temas y perspectivas significativas sobre cómo las innovaciones digitales impulsan la agilidad organizacional, como los roles del liderazgo, la cultura y la adopción de tecnologías.

Resultados: los hallazgos muestran que la innovación digital mejora la agilidad organizacional al automatizar procedimientos, permitir la toma de decisiones en tiempo real y aumentar la información basada en datos. La IA y la IoT permiten tiempos de respuesta más rápidos, una mayor participación del consumidor y operaciones más eficientes.

Conclusión: la innovación digital es un factor clave para la agilidad organizacional, ya que proporciona las herramientas necesarias para adaptarse a entornos en constante cambio. Para aprovechar al máximo los beneficios de la transformación digital, las organizaciones deben alinear sus estrategias digitales con los enfoques de liderazgo y fomentar una cultura de aprendizaje continuo y adaptabilidad.

Palabras clave: Innovación Digital; Agilidad Organizacional; Enfoques de Liderazgo; Transformación Digital.

INTRODUCTION

Digital innovation refers to the intentional application of digital classification to improve consumer knowledge, develop new products or services, advance business processes, and adjust to shifting marketplace demands. It comprises redefining goods, services, and actions while delivering experimental charges by utilizing digital equipment such as blockchain, cloud computing stands, Artificial Intelligence (AI), and the Internet of Things (IoT) [1] These advances enable organizations to develop effectiveness, quickness, and client skills. Key technological basics include Machine Learning (ML) techniques, big data analytics, and automation tools. By leveraging this equipment, businesses solve complex challenges, streamline processes, and adapt speedily to market changes, driving sustainable growth and competitive advantage in a fast-evolving digital landscape. [2] Figure 1 shows the framework of digital innovation capabilities and their role in achieving innovation outcomes.
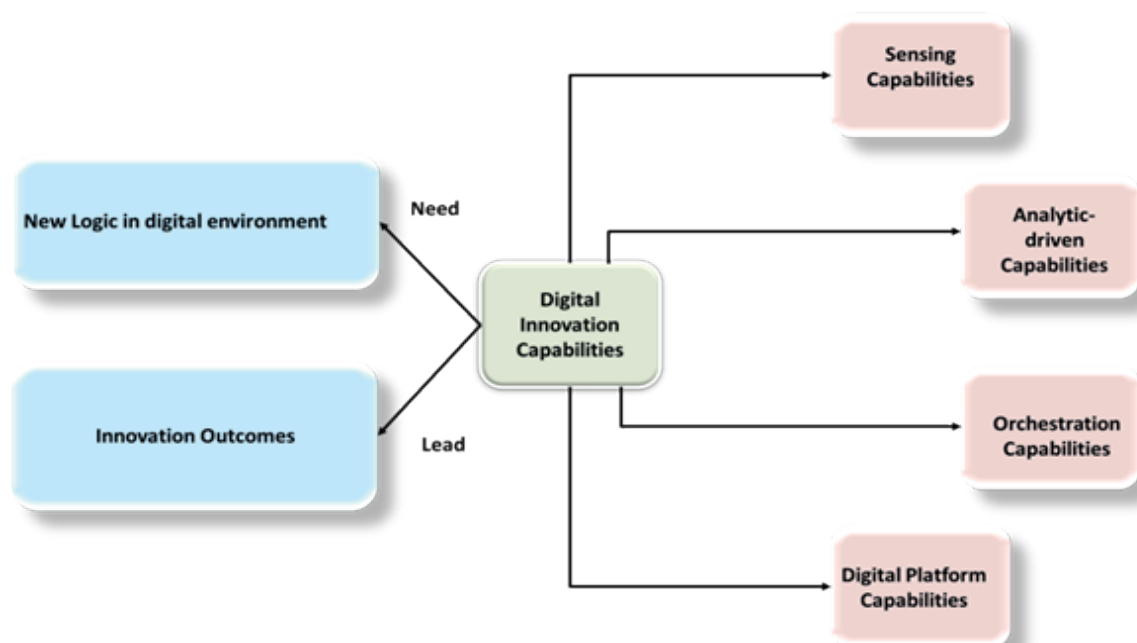

Figure 1. Framework of digital innovation capabilities and their role in achieving innovation outcomes

Figure 2 displays the digital transformation journey: linking digital innovation to enhanced Organizational Agility (OA) and presentation. While digital innovation has a lot of benefits, such as improved agility, data-driven decision-making and real-time sensitivity, it also has faults, such as a high present action rate, cybersecurity intimidation, and reluctance to transform. [3] Businesses would stay competitive, react swiftly to market stress, and promote long-term growth in a world that is altering quickly by utilizing this knowledge. [4] A company's ability to quickly detect and adapt to changes in its surroundings is known as OA. Agility is now a key necessity in today's quickly evolving business contexts. Organizations are raising decision-making, predicting market trends, and streamlining operations by utilizing AI technologies including automation, ML, and predictive analytics. [5]
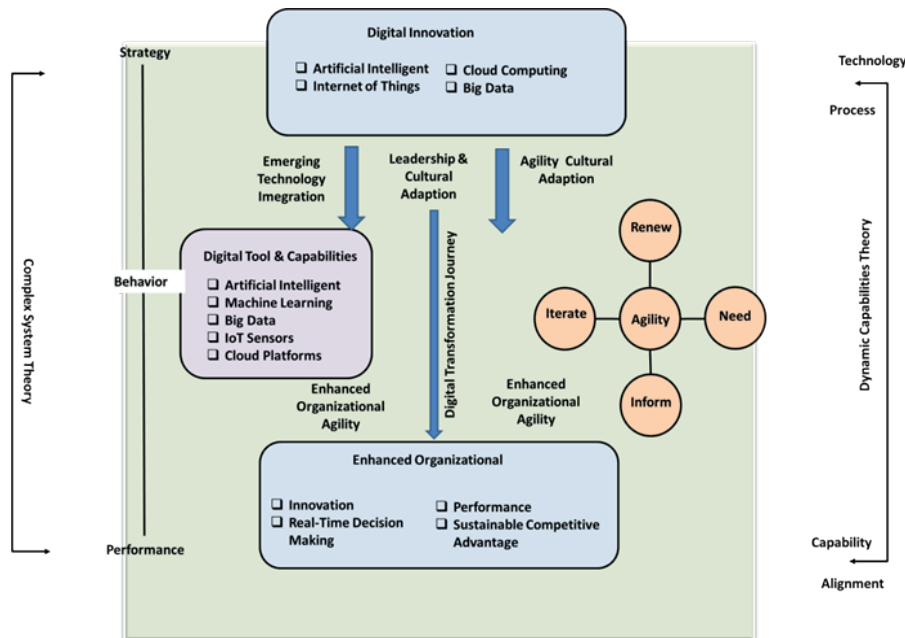

Figure 2. Overview of the Digital Transformation Journey

However, disputes including poor data value, moral dilemmas, a shortage of qualified staff, and integration complexity make agility complicated. Despite these challenges, AI-driven agility helps businesses stay resilient, innovate more quickly, and customize services, all of which contribute to long-term competitiveness and awareness in a changing and dynamic financial system. [6] The objective of this review is to examine how OA benefits from digital innovation in rapidly developing business situations.

DEVELOPMENT
THEORETICAL FOUNDATIONS OF ARTIFICIAL INTELLIGENCE (AI) AND INNOVATION MANAGEMENT

AI-based solutions are intelligent systems capable of interpreting external data and performing tasks with adaptability. In the 21st century, AI has become a major area of study across diverse fields such as science, engineering, medicine, business, and law. Defined as a system that learns, interacts, and solves problems traditionally handled by humans, AI is increasingly being integrated into organizational functions. [7] Figure 3 represents the year-wise growth in the total number of digital innovations (2018-2025).
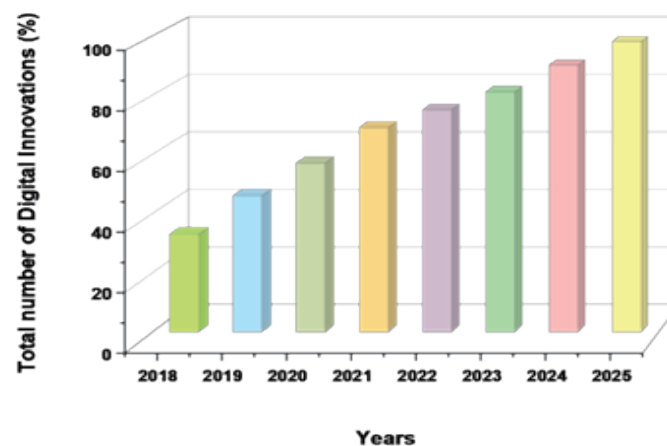

Figure 3. Year-wise growth in the total number of digital innovations

As AI develops increasingly accessible in terms of technological cost, computer capacity, expertise distribution, and data availability, more companies are incorporating AI in some of their business processes. [8] The process of digital business transformation combines technology with strategy, culture, and structure to improve competitive advantage. Key frameworks support this transformation, including the alignment of digital efforts with corporate goals (Digital Business Strategy), the use of dynamic capabilities to adapt to rapid change, and the Strategy Structure Process (SSP) method, which stresses harmony between strategy, structure, and processes. [9] Additionally, the digital ecosystem framework emphasizes the importance of collaboration and network effects.

UNDERSTANDING ORGANIZATIONAL AGILITY (OA): KEY DEFINITION AND CORE DIMENSIONS

OA promotes rapid adaptability, innovation, and competitiveness through dynamic capabilities, agility drivers, enablers, and strategic responsiveness. The ability to develop, adapt, and implement changes that help customers and harm competitors is referred to as dynamic capabilities. As a result, the active capability approach is useful when talking about agility. Furthermore, entrepreneurial ability is essential to the coordination of various components and to the ability to forecast changes and trends in a company's environment both of which are components of dynamic capability and are essential to a flexible organization. [10] In summary, considering all of the previously listed elements of a dynamic skill is advantageous for competitive objectives since the set is "not only scarce but also frequently difficult to imitate." Table 1 shows the empirical study on OA Methodology tools.

Table 1. Review of empirical study on OAtools and key findings						
Citations	Software(s)	Technique(s)	Organizational Agility (OA) Sub Dimensional	Sample	Methodology	Review Results
[11]	SmartPLS, ADANCO	PLS-SEM	Agility in business operations, customer service, and partnerships.	153 organizations based in Spain.	Empirical verification with data from surveys.	The ability to fully mediate OA has a favorable impact on organizational performance. The results of the multigroup. Investigation showed that organizations in high-tech sectors are more affected by IS capabilities in terms of OA than those in medium-tech fields.
[12]	SPSS	PLS-SEM	No	106 business and IT managers in China.	Empirical verification with data from surveys.	Depending on how IT business spanning capability interacts with particular technical IT capability types, it has varying effects on OA. IT flexibility has a significant impact on OA, but high IT business-spanning capacity reduces the efficacy of IT integration.
[13]	LISPEL	PLS-SEM	Agility in market capitalization and operational adjustment.	China has 280 agricultural organization managers.	Empirical verification with data from surveys.	OA acts as a mediator between the organization's financial and nonfinancial performance advantages and e-commerce competencies (technical, managerial, and talent capabilities).

Classification of Agility in Organisations

Agility drivers are changing conditions that make organizations more vulnerable and force them to look for ways to gain a competitive advantage. [14] *Agility capabilities* are specific skills for offering the necessary strength and competence to respond to changes, and they include responsiveness, competency, flexibility, and speed. Agility enablers are the strategies, resources, habits, and essential technology that facilitate OA. Agile enablers facilitate the realization of agile capabilities and are used as leverage at various organizational levels. Agility dimensions is still defensible due to the words "agility dimensions" being used in an unclear manner and lacking a clear definition. [15] A simplified summary of the agility categories and their connections is given in figure 4.
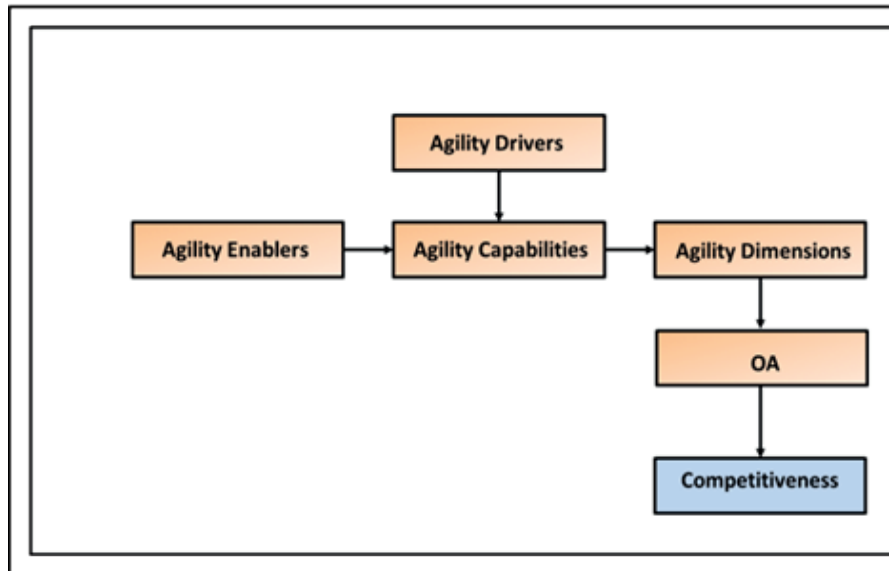
Figure 4. Conceptual framework for achieving organizational agility in a volatile business environment

HOW DIGITAL BUSINESS TRANSFORMATION ENHANCES ORGANIZATIONAL AGILITY (OA)

Adaptive leadership, increased flexibility, and the use of digital tools like analytics, cloud computing, and artificial intelligence are all ways that digital transformation improves agility.

Enhancing responsiveness and flexibility has become essential for organizations looking to stay competitive in the fast-paced, uncertain business world of the digital period. When combined, these skills help organizations take advantage of new opportunities and manage uncertainty, especially when it comes to digital change.[16] A key element of increasing flexibility and responsiveness is the development of dynamic capability, which refers to the organizational procedures that allow companies to integrate, build, and reconfigure internal and external skills to handle rapidly changing environments. Digital tools and platforms are essential enablers of OA in the digital era. It enhances responsiveness, flexibility, and scalability, helping businesses adapt to fast-changing environments.[17] Cloud computing plays a vital role by offering scalable, on-demand resources, removing the limitations of traditional IT infrastructure.

DISTINGUISHING ORGANIZATIONAL AGILITY FROM RELATED CONCEPTS

Flexibility, leanness, adaptability, reactivity, absorptive capacity, and market orientation are all different from OA in terms of speed, scope, and strategic goals. Adaptability could be regarded as a feature of a business's manufacturing system. The term ability to adjust or improve its cost performance according to demand describes it, and it has been associated with increased cost sensitivity.[18] Adaptability is more cost-effectively measured than leanness when customer demand declines since flexibility comes at a higher cost. Similar to the OA idea, absorptive capacity highlights knowledge. The later elements of a form's absorptive capacity were likened to the reacting part of OA, while the sensing part of OA was compared to the acquisition and assimilation of external knowledge.[19] OA continues to emphasize managing change rather than controlling knowledge, as seen in the idea of absorptive capabilities. The consistency of how the concepts are applied is another notable difference.

OVERCOMING BARRIERS TO ORGANIZATIONAL AGILITY IN THE DIGITAL TRANSFORMATION JOURNEY

The barriers to digital agility must be addressed by addressing legacy systems, resistance to change, and skill gaps through strategic integration and continuous workforce upskilling for flexibility.

Organizations often face significant challenges in their digital transformation journeys due to outdated legacy systems and communication limitations. These legacy systems, built for stability in a pre-digital era, lack the flexibility and scalability required today. Their rigid, monolithic architectures hinder the integration of modern digital tools, making it difficult to adopt agile practices needed for rapid market responsiveness.[20] Additionally, the high costs of maintaining and upgrading these systems divert resources from innovation-driven initiatives, slowing overall transformation efforts.

Successful digital alteration is hampered by organizational inactivity and confrontation to change. Internal opposition that organizations face while trying to adapt to rapidly changing contexts impedes or even halts transformational initiatives. It is essential for an executive who wants to guide their organizations through alteration to comprehend the origins and characteristics of this resistance as well as the idea of organizational inactivity.[21] These organizations frequently generate inflexible procedures and organizations that are geared

towards efficiency and stability but challenging to modify when the outside world shifts.

EMERGING TECHNOLOGIES AND FUTURE TRENDS SHAPING ORGANIZATIONAL INNOVATION

Emerging methods such as AI, ML, IoT, and Big Data improve OA through process automation, concurrent data analysis, enhanced decision-making, and customer knowledge customization for competitive benefit.In the digital age, ML and AI are the most important tools that support OA. The capability to rapidly regulate changes and make data-driven decisions is essential for organizations to continue a competitive boundary as they traverse gradually more active and difficult marketplaces. Automation is one of the main ways that AI and ML improve OA. In exact terms, ML is essential for improving organizational decision-making actions.

Big Data and the IoT are combining to transform real-time decision-making in a variety of industries. IoT, or the network of associated devices that gather and exchange data, in addition to Big Data analytics, offers organizations earlier unheard-of chances to boost customer satisfaction, equipped efficiency, and agility. [22,23,24,25] Big data and the IoT are principal ways of this change. One of the main ways that IoT and big data support concurrent decision-making involves regularly collecting and analyzing the enormous volumes of data created by IoT devices. [26,27,28,29,30]

DISCUSSION

The study highlighted how digital innovation significantly improves OA by leveraging AI, IoT, and big data to develop flexibility, decision-making, and customer engagement. [31,32,33] However, more than a few challenges persist, such as legacy systems, skill gaps, data integration difficulty, and resistance to change, which hinder seamless digital conversion. Moreover, many organizations lack a cohesive strategy that aligns management, culture, and knowledge. These issues limit the full realization of digital alertness. [34,35,36] Future studies should explore the growth of adaptive frameworks that better incorporate emerging technologies with organizational procedures. There was also a need to investigate scalable upskilling programs and hybrid scheme methods that support continuous learning and gradual infrastructure modernization. Furthermore, studies examine the ethical and governance dimensions of AI and data usage in agile atmospheres. [37,38]

CONCLUSION

This study concluded that digital innovation serves as a critical enabler of OA in today's thrilling and changeable industry environment. By leveraging advanced technologies such as AI, ML, IoT, and big data analytics, organizations mechanize procedures, improve concurrent decision-making, and advance responsiveness to changing market demands. The study demonstrated that growing digital conversion needs more than technological acceptance; it demands adaptive management, a supportive culture, and continuous workforce development. Despite the promising potential, organizations must overcome significant barriers, including outdated legacy systems, resistance to change, and skills shortages. Addressing these disputes through strategic planning, cross-functional collaboration, and sustained digital investment is essential for achieving long-term agility.

REFERENCES

1. Akter S, Michael K, Uddin MR, McCarthy G, Rahman M. Transforming business using digital innovations: The application of AI, blockchain, cloud and data analytics. Annals of Operations Research. 2022 Jan 1:1-33. https://doi.org/10.1007/s10479-020-03620-w

2. Nti IK, Quarcoo JA, Aning J, Fosu GK. A mini-review of machine learning in big data analytics: Applications, challenges, and prospects. Big Data Mining and Analytics. 2022 Jan 25;5(2):81-97. https://doi.org/10.26599/BDMA.2021.9020028

3. Khan AW, Zaib S, Khan F, Tarimer I, Seo JT, Shin J. Analyzing and evaluating critical cyber security challenges faced by vendor organizations in software development: SLR based approach. IEEE Access. 2022 Jun 2;10:65044-54. https://doi.org/10.1109/ACCESS.2022.3179822

4. Walter AT. Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization. Management Review Quarterly. 2021 Apr;71(2):343-91. https://doi.org/10.1007/s11301-020-00186-6

5. Plaza Escandon HD, Del Campo Saltos GS, Guevara Viejó F. Influence of digital platform use on reading and writing for cognitive development in eighth-grade students in general basic education. Case study: Monseñor Juan Wiesneth educational unit. South Health and Policy. 2022; 1:16.

6. Gómez Escobar N, Castillo Peña A, Pérez Castillo C. Analysis of growers' perception of the use of an automated irrigation system. Environmental Research and Ecotoxicity. 2023; 2:54.

7. Villada Melo RA, Caicedo Peña JC, Rivera Rosero JA. Technological innovation for cultural tourism: Virtual assistant at the Las Lajas Shrine, Colombia. Land and Architecture. 2025; 4:184.

8. Montano-Silva RM, Abraham-Millán Y, Peña-Méndez A, Fernández-Breffe T, Céspedes-Proenza I, Romero-Amaro J de la C. Science, innovation and development for a healthy smile. Nursing Depths Series. 2025; 4:157.

9. Vărzaru AA, Bocean CG. Digital transformation and innovation: The influence of digital technologies on turnover from innovation activities and types of innovation. Systems. 2024 Sep 11;12(9):359. https://doi.org/10.3390/systems12090359

10. Cooke E, Lopez G, Hilmers A, Addiss DG. Ethical challenges and moral distress among field epidemiologists. BMC Public Health. 2022 Mar 16;22(1):510. https://doi.org/10.1016/j.jemep.2021.100635

11. Valencia-Arias A, Jimenez Garcia JA, AlvitesAdan TE, Martínez Rojas E, Valencia J, Agudelo-Ceballos E, Uribe Bedoya H, Moreno López GA. Trends in the sustainable use of artificial intelligence: a bibliometric approach. Discover Sustainability. 2025 Dec;6(1):1-22. https://doi.org/10.1007/s43621-025-01222-9

12. Longo L, Brcic M, Cabitza F, Choi J, Confalonieri R, Del Ser J, Guidotti R, Hayashi Y, Herrera F, Holzinger A, Jiang R. Explainable Artificial Intelligence (XAI) 2.0: A manifesto of open challenges and interdisciplinary research directions. Information Fusion. 2024 Jun 1;106:102301. https://doi.org/10.1016/j.inffus.2024.102301

13. Montaño Jiménez JR, Martínez Severich R, Calle Viles E, Ortega Martinez RA. Design and Development of a Podiatric Station Prototype for the Diagnosis of Diabetic Foot. eVitroKhem. 2025; 4:165.

14. Jiménez Pérez GA. Benefits and challenges of using AI in heritage education. EthAIca. 2024; 3:102.

15. Estrada Meza RU, González Pérez MG. Urban Mobility and Social Justice: public transport in the Guadalajara metropolitan area, Mexico. Transport, Mobility & Society. 2023; 2:68.

16. Díaz Cruz SA, Batista Villar T, Valido-Valdes D, Núñez Núñez Y, Fernández González JL. Factors that impact in the answer of the ulcers from the diabetic foot to the Heberprot-P®. Podiatry (Buenos Aires). 2025; 4:151.

17. Johnson PC, Laurell C, Ots M, Sandström C. Digital innovation and the effects of artificial intelligence on firms' research and development–Automation or augmentation, exploration or exploitation? Technological Forecasting and Social Change. 2022 Jun 1;179:121636. https://doi.org/10.1016/j.techfore.2022.121636

18. da Silva RG. The advancement of artificial intelligence in biomedical research and health innovation: challenges and opportunities in emerging economies. Globalization and Health. 2024 May 21;20(1):44. https://doi.org/10.1186/s12992-024-01049-5

19. Felipe CM, Leidner DE, Roldán JL, Leal-Rodríguez AL. Impact of IS capabilities on firm performance: The roles of organizational agility and industry technology intensity. Decision sciences. 2020 Jun;51(3):575-619. https://doi.org/10.1111/deci.12379

20. Gao P, Zhang J, Gong Y, Li H. Effects of technical IT capabilities on organizational agility: The moderating role of IT business spanning capability. Industrial Management & Data Systems. 2020 May 4;120(5):941-61. https://doi.org/10.1108/IMDS-08-2019-0433

21. Santaya Labrador JM, Perojo López OL. Information management in university residences: an experience from the UCM in Pinar del Río. South Health and Policy. 2023; 2:71.

22. Gaviria MA. Environmental Education as a Strategy for Ecosystem Conservation: A Bibliometric Analysis of Global Trends. Environmental Research and Ecotoxicity. 2025; 4:175.

23. Arteaga Quistial JE, Velásquez Bravo M Ángel, Revelo Zambrano OA. Application of predictive models for

territorial planning in Pasto, Colombia. Land and Architecture. 2024; 3:110.

24. Zambrano Farias LK, Cabrera Olvera JL. Clinical Simulation in health care training: barriers to efficacy and impact on health care safety. Nursing Depths Series. 2025; 4:390.

25. Li L, Lin J, Turel O, Liu P, Luo X. The impact of e-commerce capabilities on agricultural firms' performance gains: the mediating role of organizational agility. Industrial Management & Data Systems. 2020 Jul 18;120(7):1265-86. https://doi.org/10.1108/IMDS-08-2019-0421

26. Sjödin D, Parida V, Palmié M, Wincent J. How AI capabilities enable business model innovation: Scaling AI through co-evolutionary processes and feedback loops. Journal of Business Research. 2021 Sep 1;134:574-87. https://doi.org/10.1016/j.jbusres.2021.05.009

27. Vrontis D, Belas J, Thrassou A, Santoro G, Christofi M. Strategic agility, openness and performance: a mixed method comparative analysis of firms operating in developed and emerging markets. Review of managerial science. 2023 May;17(4):1365-98. https://doi.org/10.1007/s11846-022-00562-4

28. Arno P. SME Business Agility Framework: A Comprehensive Review of Capabilities, Dimensions, and Enablers. IEEE Access. 2025 May 22. https://doi.org/10.1109/ACCESS.2025.3572526

29. Ashok M, Al Badi Al Dhaheri MS, Madan R, Dzandu MD. How to counter organisational inertia to enable knowledge management practices adoption in public sector organisations. Journal of Knowledge Management. 2021 Nov 17;25(9):2245-73. https://doi.org/10.1108/JKM-09-2020-0700

30. Diaz Breto G, Pérez Alvarez Y, Rego Rodríguez FA. Portable Technologies in Clinical Biochemistry, from the laboratory to the point of care. eVitroKhem. 2025; 4:160.

31. Arancibia PB, del Valle Soria S. The impact of artificial intelligence on educational transformation. EthAIca. 2023; 2:70.

32. Estrada Meza RU, González Pérez MG. Analysis of public transport fares in Guadalajara, Mexico. Transport, Mobility & Society. 2023; 2:72.

33. Auza-Santivañez JC, Bautista-Vanegas FE, Carías A, Apaza Huanca B, Sosa Remón A, Condo-Gutierrez AR, et al. Structural and functional disorders in children's feet, motor development, and preventive approaches in early life. Podiatry (Buenos Aires). 2025; 4:163.

34. Volberda HW, Khanagha S, Baden-Fuller C, Mihalache OR, Birkinshaw J. Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. Long Range Planning. 2021 Oct 1;54(5):102110. https://doi.org/10.1016/j.lrp.2021.102110

35. Carvalho AM, Sampaio P, Rebentisch E, McManus H, Carvalho JÁ, Saraiva P. Operational excellence, organizational culture, and agility: bridging the gap between quality and adaptability. Total Quality Management & Business Excellence. 2023 Aug 18;34(11-12):1598-628. https://doi.org/10.1080/14783363.2023.2191844

36. AlNuaimi BK, Singh SK, Ren S, Budhwar P, Vorobyev D. Mastering digital transformation: The nexus between leadership, agility, and digital strategy. Journal of Business Research. 2022 Jun 1;145:636-48. https://doi.org/10.1016/j.jbusres.2022.03.038

37. Walsh C, Renn M, Klauser D, De Pinto A, Haggar J, Abdur R, Hopkins RJ, Zamil F. Translating theory into practice: A flexible decision-making tool to support the design and implementation of climate-smart agriculture projects. Agricultural Systems. 2024 Aug 1; 219:104060. https://doi.org/10.1016/j.agsy.2024.104060

38. Cooke E, Lopez G, Hilmers A, Addiss DG. Ethical challenges and moral distress among field epidemiologists. BMC Public Health. 2022 Mar 16;22(1):510. https://doi.org/10.1016/j.jemep.2021.100635

CONFLICT OF INTEREST

None.

AUTHORSHIP CONTRIBUTION:

Conceptualization: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Data curation: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Formal analysis: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Research: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Methodology: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Project management: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Resources: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Software: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Supervision: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Validation: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Display: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Drafting - original draft: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.

Writing - proofreading and editing: Hemanth Kumar V, Lavanya M, Parag Amin, Varalakshmi S, Dikshit Sharma, Pradeep Kumar Shinde, Sasmita Pattnaik, Abhishek Upadhyay.