

Understanding the Organizational Applications of Artificial Intelligence: Insights from a Systematic Literature Review and Bibliometric Analysis

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Abstract:

Organisations are adopting to artificial intelligence (AI) very rapidly which is revolutionizing business processes and decision making. AI applications in businesses span multiple areas, including content creation, data analytics, automation as well as pattern recognition

Purpose: This study investigates the role and impact of AI technologies on various organisational practices, including decision-making, process automation etc. In this article, we explore how organisations are adopting AI tools to enhance operational efficiency, drive innovation, and gain competitive advantage. It also examines the challenges and ethical considerations associated with AI implementation.

Methodology: The research is conducted by collecting data from secondary sources like scholarly literature, industry reports, and case studies.

Results: Adoption of AI is influenced by factors like AI readiness, change capability, leadership involvement etc Artificial Intelligence is revolutionizing how organisations operate and make decisions on a daily basis.

Conclusion: The evolution of AI has greatly transformed the nature of organisational framework and integration of AI is crucial for organisation success.

Keywords: *Artificial Intelligence, Adoption of AI, Digital transformation, Ethical AI*

1.Introduction

Artificial intelligence is quickly changing the organisational environment by influencing many aspects of strategy, operations, and decision-making. This presents firms in a variety of industries with previously unheard-of potential as well as difficulties. Artificial Intelligence (AI) technology, including automation of tasks, robotics technology, natural language processing, and machine learning, are rapidly changing how businesses operate (Kandasamy & Swarnamalyaa, 2024)

In the current business scenario, artificial intelligence (AI) is considered as a disruptive technology for the organisation which is playing a vital role in radically changing the operation effectiveness and enhances decision making. It has the potential to transform operational methods and competitive models. Application of AI go beyond automation(Romeo & Lacko, 2025)

AI tools alone are not sufficient to gain the competitive advantage among the competitors, as even the competitors can acquire these tools easily; the human aspect i.e., how the



employees adopt this technology, will add value to the AI capability (Mikalef & Gupta, 2021). Thus, organisation support in the form of training and continuous learning culture plays an important role in using AI tools to its full potential.

AI applications span a wide range of sectors, including manufacturing, healthcare, finance, and retail (Murire, 2024). Organisations are increasingly utilizing AI to streamline repetitive tasks, enhance customer experiences, optimize supply chain processes, support data-driven decisions, and stimulate innovation (Rodiya, 2022). In software organisation, there has been an increased usage of AI in software development; these organisations may develop AI tools or acquire tools externally to support anonymizing prompts to maintain confidentiality (Li et al., 2024)

It is enhancing the transport efficiency and reducing the road accidents with the help of complex algorithms(Zorman et al., 2024), it is helping in the field of medical diagnostic by giving accurate diagnosis for medical professionals in patient care (Dias Costa Braz, 2024), and also helps the air traffic management in real-time optimization of flight operations. AI-based recruitment tools have significantly enhanced the recruitment process in terms of cost, time and quality (Horodyski, 2023a)

By processing massive volumes of data with unprecedented speed and accuracy, AI systems uncover patterns and generate insights that empower organisations to make more strategic and informed decisions (Zatsu et al., 2024). This growing adoption signals not only a broader acceptance of AI's transformative potential but also reflects the maturity and reliability of contemporary AI technologies.

The rapid advancement of AI was possible across many industries due to the availability of data and an intense development in AI technologies across the globe. The availability of data and AI techniques enabled organisation in improving the efficiency of operations,

managerial decision-making etc thus enhancing the productivity of the organisations(Shrestha et al., 2021). This has enabled the organisation to drive innovation and value generation in most of the areas.

The evolution in AI technology in both the public and private sectors has led to the emergence of new applications and use cases at each stage of its development and has significantly redefined the strategies in the organisational landscape(Sinha & Khaled Al Huraimel., 2020). In this regard, it is essential for the organisations need to understand the enablers that drive the AI adoption and the barriers which hinders the AI adoption(Romeo & Lacko, 2025). Many authors have contributed on AI adoption and to gain insights on this construct, several theories and models was formed for indepth understanding.

The most well-known model on AI adoption is the Technology Acceptance Model (Davis, 1989). The TAM model, developed by Davis, focuses on perceived usefulness and ease of use as determinants of technology acceptance(Romeo & Lacko, 2025). The Theory of Planned Behaviour (Ajzen, 1991), instead extends the previous view by incorporating factors such as attitudes, subjective norms and perceived behavioural control.

The other models like Task-Technology Fit model (Goodhue & Thompson, 1995) highlights the importance of the fit between the technology and the tasks it supports, while the Unified Theory of Acceptance and Use of Technology (Venkatesh, 2022) integrating several previous models, adds new dimensions such as social influence and facilitating conditions.

The technology adoption is influenced by the technological characteristics along with organisational and environmental factors and this concept is explain in a broader perspective in the Technology-Organisation-Environment



(TOE) framework (Tornatzky & Fleischer, 1990).

The use of AI in the organisation extends beyond the mere task automation. It enhances human capabilities, fuels the development of novel business models, and creates avenues for sustained competitive advantage (Chen et al., 2023). AI-powered tools are contributing to shorter development cycles, advanced quality control, and improved overall service and product standards, all while enriching the human experience (Tominc & Rožman, 2023).

AI-powered tools can improve communication, feedback loops, tracking systems, and decision-making in businesses (Nguyen & Shaik, 2024). Moreover, AI can foster innovation by enabling organisations to experiment with new products, services, and business models. AI can enable more efficient resource allocation, optimize pricing strategies, and personalize customer experiences, leading to increased revenue and profitability.

These tools enable more robust strategic planning, fostering greater interdepartmental collaboration, and promoting adaptive leadership styles (Joshi & Joshi, 2022). In service-based industries like IT and ITES organization, AI has gained wide importance, especially through complex algorithmic systems which have human-like features like chatbots, AI assistance in various processes etc (Chen et al., 2023). Though the benefits of AI are numerous, the issues like bias in AI algorithm can be very challenging for the organisation. The AI tools have complex algorithms and these algorithms learn the bias from the historical data which impacts bias in decision making.

Implementing AI within organisations demands a nuanced understanding of its strengths, limitations, and ethical dimensions. It is critical for organisations to evaluate their unique objectives and operational needs to ensure that AI initiatives are aligned with broader strategic goals and core values. This often entails

revisiting management practices, cultivating a culture that embraces innovation, upskilling employees, and redefining business strategies (Tominc & Rožman, 2023).

Moreover, ethical and social implications—such as algorithmic bias, data privacy concerns, and workforce displacement—must be carefully considered. Organisations have a responsibility to evaluate how AI adoption will affect their employees, customers and broader societal context in which they operate. The major drawback of AI technology is the biased data, which sets negative impact in decision making process and lack of nuance in human judgement (Horodyski, 2023b).

The challenges of implementing AI tools are high costs related to implementation and maintenance; the data security issues which can lead to privacy issues; lack of human touch or involvement resulting in lack of creativity or innovation and lastly potential biases in the algorithm (Garg et al., 2023).

AI is increasingly being adopted by organizations across various sectors, revolutionizing business operations and decision-making processes. AI applications in businesses span multiple areas, including data analytics, content creation, pattern recognition, and automation (Walia, 2024).

The adoption of AI in organizations is influenced by factors such as change capability, leadership, AI readiness, and adoption by trading partners (Kurup & Gupta, 2022). While AI implementation offers benefits which improves productivity and competitiveness it also presents challenges and risks that organizations must address (Ali et al., 2021).

The impact of AI extends beyond business operations, affecting various domains such as unmanned vehicles, medical diagnosis, and environmental sustainability (Ali et al., 2021). As AI continues to advance, organizations that fail to integrate this technology may risk



becoming outdated or obsolete due to increasing competitive market landscape.

RQ1: What are the key areas where Artificial Intelligence (AI) is applied within organizations and its impact on organization performance?

RQ2: What are the main challenges and driving factors influencing the adoption of AI within the organizations?

These research questions are answered by performing a Systematic Literature Review (SLR)

1.1 History of AI Development: Application of AI and its impact on organizational performance (RQ1):-

AI development has changed the way organisation's operations and in decision-making process (Romeo & Lacko, 2025). Initially, AI was just a basic analytical tool or with automation functions. Now, AI is evolved into advanced and ubiquitous technology which not only performs very sophisticated and complex tasks, it also adapts to dynamic environment.

The early stage of AI development is from 1960s to 1980s, during which AI was not effective and did not give much results. Not much growth of AI in these two decades due to technological limitations and many companies in public as well as private sector didn't show interest towards AI development; Hence, in this period, the growth of AI was very slow due to lack of research funding from many businesses and government as AI didn't yield much results (Romeo & Lacko, 2025).

The next stage is from 1980s to 1990s and in this stage, there was an increased interest towards the AI development; Many businesses and government funded for the research in AI as there was a potential benefit in automation of various business process. The AI systems helped in human decision making in many fields like military, business decision-making, medical diagnosis, military, finance, production

process etc (Edwards et al., 2000) that enabled to enhance efficiency by optimizing the operations in the organisation.

In the 2000s, there was an increased development of AI tools in many areas because the computational capacity in terms of data handling and speed was enhanced significantly (Tien, 2017). Organisations began to leverage on the potential of machine learning due to its ability to analyse large data and give useful insights to enhance efficiency of processes in logistics, SCM, navigation etc (Romeo & Lacko, 2025).

AI has reached to its advanced level from 2010 onwards due rapid and significant advancement of computational power, big data analytics and evolution of deep learning technologies (Raschka et al., 2020). Businesses are increasingly leveraging advancements in artificial intelligence, supported by the growing accessibility and affordability of enabling technologies such as development platforms, data processing capabilities, and storage solutions (Fountaine et al., 2019). There is also rise in the use of AI in healthcare domain to make decision related to patient diagnosis (Alami et al., 2020)

The AI applications has progressed to advanced levels, enabling it to perform increasingly sophisticated tasks with minimal human interference which has led to significant improvements in efficiency, often surpassing human performance in various domains (Romeo & Lacko, 2025).

Hence, the evolution of AI can be characterized by transition from rule-based tools to advanced generative AI models (Romeo & Lacko, 2025), reflecting the AI's growing complexity and capabilities. Also, development of AI has significantly contributed to enhance organisational operational efficiency by enabling more effective decision-making processes, thereby creating measurable value (Benbya, 2020).



There are 3 main concepts related to AI techniques which are recurrent in most of the research journals i.e., Machine Learning(ML), Natural Language Processing(NLP) and Deep Learning(DL).

ML is used to analyse large volume of data(Ben Jabeur et al., 2023), make predictions, data patterns and data-driven decisions(Chowdhury et al., 2023). In the field of marketing, AI and ML enhancing the customer management (Volkmar et al., 2022) and HR managers are predicting turnover of employees with the help of ML.

NLP has merged linguistics and AI technology to understand the input given in human language. This has helped to improve the communication strategies like customer service, employee experience thus enhancing accuracy and reducing risks (Gupta et al., 2024; Kalogiannidis et al., 2024)

DL can understand volumes of datasets by employing ML and neural networks. It is used for advanced predictive-analytics, data with many dimensions, image recognition and speech analysis (Selmy et al., 2024). These models enhance the effectiveness of organization by optimizing the processes and data-driven analysis (Singh & Goyal, 2023).

These 3 key areas which plays a vital role in the integration of AI tools in the organization.

1.2 Challenges and driving factors of AI (RQ2)

The primary concerns the organizations face while integrating AI tools are - Resistance to change is the primary barrier towards AI implementation in the organizations(Klumpp, 2018). It refers to employees refusing to adapt due to fear of losing the job, uncertainty or loss of control (Moradi & Dass, 2022).

Concerns over Data Privacy is very important for effective implementation of AI tools (Gurjar et al., 2024). Bias in data due to poor quality of data and coding will lead to ineffective decision-making (Srouji & Bellè, 2022).

Insufficient Training & Skills among employees will impact AI integration as skills and adjustments for the employees is required for AI adoption (Menzies et al., 2024). Training is essential for employee collaboration and effective adoption (Kalogiannidis et al., 2024; Kumar & Mittal, 2024)

The main enablers of AI are - Access to Technology & Funding is a critical enabler as technological infrastructure is essential for AI integration (Horani et al., 2025). Financial capital is also important to align the technological progress with business objectives (Sharabati et al., 2024).

Continuous Learning helps the workforce to upskill with necessary knowledge and skills to effectively use AI tools (Radhakrishnan et al., 2022; Sharma et al., 2022). Thus many organizations are providing training related to AI like machine learning, Predictive analytics, Deep Learning and natural language processing (Issa et al., 2022).

Management Support is essential as leader's vision and strategy is significant to integrate AI tools(Nawaz et al., 2024) and also supportive organization culture(Black et al., 2024) promotes conducive environment for AI integration.

Supportive AI Policies & Frameworks in the organization provide clear guidelines and reduce legal uncertainties and also provide supportive environment for AI adoption (Romeo & Lacko, 2025)

2. Methodology

This secondary data analysis employs a methodical literature review methodology to examine the application of AI technology and its adoption in the organization. This exploration follows conducting secondary analysis with peer-reviewed journals and incorporating high-quality reports to ensure applicability and connection or relevance. The analysis is based on established theories related



to technology adoption like TAM, UTAUT, TOE etc. These theoretical findings contribute meaningful insights to existing knowledge

Data collection was aimed to ensure source credibility, applicability, and recency. For data collection, peer-reviewed journal papers published from past 6 to 7 years and other sources like reports from established consulting enterprises like Deloitte, McKinsey & Company, PricewaterhouseCoopers etc was considered. Data collection involved methodical comparison of research papers across sources, identification of themes or patterns, and evolution of insight that answers the exploration questions.

3. Need for the study

This era of digital transformation, there is an increase of AI adoption across organizational functions including human resource management, operations, customer service, finance, and decision-making processes. While the advantages of AI are widely discussed, there is a growing need to understand its practical application, challenges, adoption levels, and outcomes in real organizational settings.

Organizations vary widely on how AI integration due to lack research on the actual utility, employee adaptation, ethical concerns, and measurable benefits AI brings. This study bridges the gap between theoretical benefits and practical implementation, understand impact of AI tools towards efficiency and effectiveness, explore employee perceptions, readiness, and resistance and identify key drivers and barriers in AI adoption. This research contributes to both academic knowledge and practical decision-making for organizations considering or already implementing AI technologies.

4. Research Objectives

RO1: To explore the functional areas within the organizations where AI technologies are applied

RO2: To examine the impact of AI on business processes, strategic decision-making, and organizational performance

RO3: To analyze the critical enablers and barriers influencing the adoption and integration of AI in organizational contexts

RO4: To outline the emerging trends, implications, and future research directions in the domain of AI application within organizations.

5. Discussion

In early years, AI was mostly in theoretical concepts and its transformative evolution across all industries made organizations like McKinsey Global Institute (MGI) and the World Economic Forum (WEF) to determine major projection for AI. MGI has anticipated that AI technology would add \$13 billion by 2020 towards the global economy thus making evident that AI revolution is very significant for global economy (Chui et al., 2018). Also, WEF forecasts that the AI technology changes the way organizations operate by changing structure, process, job roles etc and also redefines the skill-set as business adopt AI to optimize the processes for strategic advantage (Romeo & Lacko, 2025).

AI Integration in the organisation is a complex process and contains many layers in its adoption and implementation. Deeper understanding of organisational behaviour, technological infrastructure and factors influencing the adoption of AI by individuals using AI is needed.

Although AI is becoming increasingly embedded across industries, there remains a limited synthesis of research specifically addressing user acceptance—particularly in relation to the varied and evolving functions AI fulfils within organisations (Jiang et al., 2024). Much of the current literature concentrates on strategic considerations, business outcomes, and the future of work, often at the expense of thoroughly exploring end-user experiences and

acceptance of AI technologies(Jiang et al., 2024)

The factors such as users' intentions to adopt AI, the influence of AI on purchasing behavior, and the willingness of individuals to disclose personal information to improve AI-driven services (Jiang et al., 2024). However, research into consumer attitudes, beliefs, and behavioural patterns surrounding AI adoption remains relatively underdeveloped (Cabrera-Sánchez & Villarejo-Ramos, 2020). Notably, perceptions of AI vary considerably across industries and between the organisations implemented AI and with the organizations that haven't (Vasiljeva et al., 2021).

Acceptance of the technology is essential for AI adoption and its effective usage. AI technology helps the organisation in improving the workflow and efficiency of processes through automation of tasks(Lambert et al., 2023). Because acceptance has a big impact on behavioural intention, organisations should actively measure and change attitudes towards AI (Ibrahim et al., 2025). The Technology-Organisation-Environment (TOE) framework is a helpful model for analysing the multifactorial influences on AI integration and has been used extensively in studies of technology adoption (Vasiljeva et al., 2021).

During AI integration, employees with AI-skills are the important enablers (Mikalef et al., 2023; Radhakrishnan et al., 2022) for successful transformation where are the major challenges was resistance to adopt AI changes and lack of AI-skills training (Dwivedi et al., 2021; Menzies et al., 2024).

In the end, a comprehensive strategy is needed for the successful adoption of AI in organisations which facilitate technological characteristic, organisational complexity and environmental settings in AI adoption (Mikalef & Gupta, 2021).

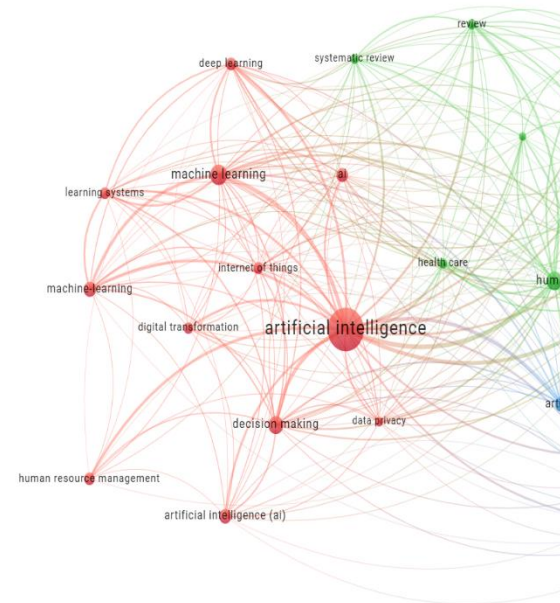


Fig 1: Keywords' overlay representation.
Source: Vosviewer

The bibliometric analysis using vosviewer was done and found the key words machine learning, internet of things, digital transformation, deep learning etc was used by authors. It suggests that IoT, Deep Learning and Machine Learning are important construct of Artificial Intelligence. Also, the term heath care and health care delivery suggest that there is high use of AI in health care sector.

6. Conclusion

AI adoption influences organisational performance in a multifaceted landscape. AI enhances operational efficiency, decision making, strategic effectiveness etc. with the help of task automation and workflow optimization, AI reduces operational costs and increased productivity. AI has the ability to analyze consumer behavior, identify the problems related to consumer dissatisfaction, understand the market dynamics, and external competitive environment; This equips the organisations with timely information by identifying the threats due to emerging trends in the market (Kitsios & Kamariotou, 2021).



The AI technology fosters innovation in task automation, informed decision making, predicting the risks and threats etc which helps organisation in developing and experimenting with new products or services, innovative business model, efficient processes etc . AI enables in more efficient and effective resource utilization. It also helps in personalized pricing strategies and customer experiences and thus enhancing profitability and long-term growth. AI tools support communication, performance tracking, feedback systems, and evidence-based decision-making processes (Nguyen & Shaik, 2024). If AI tools are embraced to their full potential, it also boosts employee's productivity (Li et al., 2024).

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