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The growing adoption of artificial intelligence (AI) to drive innovation, resulting in enhanced competitiveness

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Abstract

This paper explores organizations' increasing adoption of Artificial Intelligence (AI) technologies due to potential benefits like fraud detection and personalized customer experiences. This rapid adoption highlights challenges such as a lack of skilled staff, high implementation costs, data quality issues, ethical concerns, and regulatory hurdles. Successful AI implementation also requires addressing ethics and regulatory challenges .

Keywords: adoption, organizational competitiveness, employee talent, ethics, regulations

Introduction

AI use by organizations focusing on growth and innovation has rapidly increased in recent years. AI tools moved from only being used by organizations with deep technical knowledge to being accessible to small organizations with relatively minimal technical understanding, all in just a few years. This paper explores various topics around AI adoption by organizations seeking enhanced competitiveness. Some applications of AI, the outcomes and impact of AI implementation and integration, the human aspects and requirements of AI adoption, some of the challenges organizations may run into when adopting AI, and finally, ethical and regulatory concerns that need to be kept in mind during this transition are discussed in this paper.

Applications of artificial intelligence

There are many AI applications across various industries. This section will present AI applications in the following areas: automation of everyday or repetitive tasks, fraud detection and prevention, and personalization of marketing campaigns and customer service. One significant use is automating everyday or repetitive tasks, which can improve accuracy and efficiency. For example, an AI system can process extensive data sets exceptionally quickly and with minimal human intervention, reducing the need for manual quality assurance by up to 95%. This increase in efficiency and capability allows employees to spend their time elsewhere (Schiavone et al., 2023).

With its ability to quickly process large amounts of data, AI also excels at fraud detection and prevention. AI can identify anomalies in massive datasets of transactions and/or network activity, allowing organizations to detect suspicious activity more effectively. AI can process this information much quicker than humans, leading to faster and more accurate action by management. The quick response time, possible thanks to AI, can help minimize or even prevent the harmful effects of these issues before they become more significant problems (Setiawan & Hendayana, 2024).

Marketing campaigns and customer service have also seen significant changes with the implementation of AI. Both can be enhanced using AI, increasing overall personalization and attracting more users (Kanbach et al., 2024). Once developed, the core AI algorithms for recommendation and personalization can then be reused to reduce the development cost for new applications, saving a significant amount of resources for the organization (Jia & Stan, 2021).

Outcomes and impact of artificial intelligence integration

AI has led to many positive and sometimes adverse outcomes and impacts in the adopted organizations. This section will cover the following topics: making better-informed decisions, improving customer experience and retention, and doing more work with better employee efficiency. A few years ago, organizations hesitated to adopt AI into their products and processes. According to Gupta et al. (2020), the benefits of AI adoption by organizations were uncertain, leading to low adoption rates. Despite this uncertainty, organizations recognize the potential AI brings. A recent study has found that organizations looking to succeed have seen the integration of AI become a key success factor in pursuing competitive advantages (Harahap et al., 2024). This success is partly because organizations can make more informed investment decisions using the patterns and market trends uncovered by AI-driven analytics (Kanbach et al., 2024).

AI plays a vital role in realizing the ability to deliver personalized experiences to customers, which has become key in the ever increasingly competitive environment (Harahap et al., 2024). The increase in personalization of the customer experience due to AI implementation attracts more users, which leads to an increase in available data for learning and improvement of AI algorithms (Jia & Stan, 2021). These AI algorithms become more effective at generating valuable insights as more data is accumulated. The increase in available data due to this improved insight leads to a positive feedback loop, as the enhanced insights lead to the identification of new opportunities and the ability to collect even more data (Jia & Stan, 2021).

Employees of these organizations are also noticing a change due to integrating AI into their workflows. Employees welcome AI automation technology because it allows them to work more effectively and reduces stress. AI has dramatically changed how people work, live, and participate in society (Dokthaisong, 2023). Effective implementation of AI can lead to significant productivity improvements, freeing up employees' time to work on other tasks (Schiavone et al., 2023). While substituting human knowledge can lead to losing competitive advantage, complementing their existing knowledge creates new advantages. Human effectiveness is enhanced rather than replaced, leading to "uniquely complementary bundles" (Krakowski et al., 2023, p. 1446).

Human talent requirements for artificial intelligence adoption

The human aspect of AI adoption has also played a role in an organization's attempts to integrate new technologies effectively. This section will cover the following topics: the need for and lack of skilled talent,

training of the existing workforce, and the uniquely human experiences that AI cannot (at least not currently) replace.

The second biggest challenge in adopting AI technologies is the lack of skilled personnel. According to Rubab (2023), 35% of organizations reported this deficiency as a significant challenge, reflecting the importance of addressing human resources during AI adoption. Organizations may resist adopting innovative technologies if they perceive a lack of technical capabilities within the organization (Agrawal, 2024). Because of this inherent resistance to change when lacking appropriate talent, retaining "talents who are above high-average value" is of utmost importance to organizations looking to adopt AI (Lin & Wang, 2022, p. 3).

While it is essential to hire skilled employees, it is also just as important, if not more important, to train your existing employees. The allocation of resources and investment in employee training and development programs is vital for organizations to excel. According to Harahap et al. (2024), there is a lack of required skills to understand, manage, and optimize AI in the current market. Without proper training and understanding of AI technologies, employees may feed company data to an LLM, potentially leading to IP issues (Humphreys et al., 2024). Over-reliance and over-trust in Generative Artificial Intelligence (GAI) systems may also occur without proper training. Despite making better choices independently, people often trust and rely on AI too much, leading to worse decisions. Employers must protect workers, sensitive company information, and the public through employee training (Humphreys et al., 2024).

The effectiveness of AI adoption heavily depends on the skills of the people involved. A lack of understanding of the outcomes of AI implementation on organizational value has led to many AI initiatives failing despite a significant investment of time, effort, and resources (Enholm et al., 2022). The skills of individuals using the systems are also necessary; how the staff interact and understand the AI systems significantly impacts the degree to which those systems enhance productivity and creativity (Stanciu et al., 2024). Some skills can still not be effectively replaced by AI; while the tasks are possible, machines cannot predict human responses to uniquely human experiences. Krakowski et al. (2023) mention that "... AI is likely to substitute some, but not all of complex business tasks' activities" (p. 1445).

Challenges and solutions for artificial intelligence implementation

Implementing AI in an organization presents many challenges. This section of the paper will discuss the cost of implementation, data availability requirements, and the impact of data quality on results.

Adopting and integrating AI with existing systems and processes is not easy. The complexities involved in integrating GAI with existing systems and processes were found to have a noticeably harmful effect on the adoption of GAI (Agrawal, 2024). One of these challenges is the implementation costs for organizations adopting GAI. Software, hardware, and support costs can all be challenging for smaller organizations unable to leverage economies of scale to overcome (Agrawal, 2024).

Data availability is a significant factor in the success or failure of implementation. According to Baviskar et al. (2021), gathering training data is one of the primary challenges in effective AI adoption in recent years. AI algorithms become more effective at generating valuable insights as more data is accumulated. This increase in effectiveness leads to a positive feedback loop, as the improved insights lead to identifying new opportunities and the ability to collect more data. While this is great for larger organizations with more resources to collect the initial data, it can be difficult for more resource-limited organizations (Jia & Stan, 2021).

AI systems can also be severely handicapped by using poor-quality data in training, showing the importance of data governance in effective AI implementation (Rana et al., 2022). AI implementation can hurt the company if done incorrectly. An AI system returning poor-quality responses can negatively affect an organization's operational efficiency due to management making inappropriate decisions based on this output (Rana et al., 2022). The integration of AI in a favorable manner is positively impacted by prior experience with the systems being integrated. Organizations can bring changes consistent with current practices, leading to a more effective introduction (Agrawal, 2024). Knowledge of the possible effects of AI adoption and the enablers and inhibitors can help organizations overcome many challenges in implementing AI technologies (Enholm et al., 2022).

Ethical and regulatory concerns in artificial intelligence implementation

The use of AI presents a variety of ethical and regulatory challenges. Due to AI's recent development, many questions remain unanswered. This section will cover AI's data privacy and security concerns, as well as the ethical problems brought up by many.

One significant issue is AI technologies' data privacy and security concerns. To maximize the benefits, organizations must address and overcome the data privacy and security challenges inherent in AI technologies (Harahap et al., 2024). These requirements must be implemented in highly regulated sectors such as health and finance. While they have an enormous potential for improvements, adopting AI has intrinsic risks that must be considered (Kanbach et al., 2024).

Ethical concerns are also brought up with the use of AI. Despite efforts to implement safety measures, researchers have demonstrated the usage of prompts able to bypass the safeguards around generating harmful or unethical content that Large Language Models (LLMs) are typically built with (Humphreys et al., 2024). The perspective of everyday people must also be considered, with research documenting "that people often disapprove of AI involvement, especially in ethical or HR domains" (Kanitz et al., 2023, p. 359). Implementing new regulations and governance reforms will be essential to decrease the ethical and cybersecurity risks inherent in the rapid adoption of AI (Humphreys et al., 2024).

Summary

AI use has skyrocketed in the past few years as organizations look to become more competitive. Using AI for fraud detection and prevention has led to better security, and the personalization possible with AI leads to a better customer experience. While there are many benefits to implementing these technologies, there are also many challenges and downfalls if done incorrectly. There is a lack of adequately trained employees who understand these systems in many organizations. This deficiency can make it hard to succeed in the rapidly changing organizational environment. Organizations looking to utilize AI to improve their work effectively must have at least a basic understanding of these challenges to succeed in the market.

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