Economic Sciences
https://economic-sciences.com
ES (2025) 21(2), 283-288| ISSN:1505-4683

AI and IoT Integration in Startups: Unlocking New Business Models and Market Opportunities

Dr. Nida Malik[1], Dr. Ashok Kumar Sahoo[2], Dr. Anil Varma[3], Dr. Neelam Sheoliha[4], Dr. Navaneet D. Deshpande[5], Dr. Harshitha Y S[6]

[1]Assistant Professor, Business Administration, PSIT College of Higher Education Kanpur, Kanpur, Uttar Pradesh maliknida.2011@gmail.com, Orchid ID - 0009-0008-0338-8166

[2]Assistant Professor, Department of Commerce, Kalasalingam Academy of Research and Education, Krishnankoil -626126, rockashok555@gmail.com, https://orcid.org/0000-0001-9873-9599

[3]Associate Professor, International Institute of Management Studies, Pune

[4]Associate Professor, Management, DIHE JIMS GROUP Noida, Uttar Pradesh

[5]AIMA Accredited Management Teacher, KLE Deemed University JNMC Campus Nehru Nagar Belagavi – 590010, navaneet.hrbp@gmail.com

[6]Assistant Professor of Business and Management, CHRIST University Bengaluru

Abstract: Artificial Intelligence (AI) and its application is becoming the key trend that determines changes in business models as well as organizational forms, decision-making processes, and the generation of new value. This research aims to examine the way in which AI is being integrated into business models, specifically in terms of ethical, dynamic, and sustainability. In the following, the paper investigates ethical issues in AI, namely transparency and accountability, as well as the transition from fixed to dynamic, data-based organizational models, based on secondary qualitative data. Studious show that AI increases organizational flexibility, leadership decision making and value adding, as well as reshaping the conventional value chains. The manuscript focuses on the challenge of integrating AI capacities with human wisdom for the right and sustainable application of the technology. The knowledge derived from this study will help extend the theory of how AI can affect business model innovation and offer practical recommendations to leaders in the context of AI-driven change. More so as AI advances, business models have to be set to be ethical and sustainable, in order to be future fit in an AI-driven economy.

Keywords: Ethical AI integration, AI-driven business models, Value creation, Dynamic business models, Leadership in AI, AI ethics, Organizational transformation, AI startups, Sustainability, data-driven decision-making.

Introduction

AI has emerged as one of the most disruptive forces that have affected the dynamics of business model innovation across organizations. Being one of the key concepts of the Fourth Industrial Revolution, AI is based on the use of big data analytics, machine learning, and automation to redesign operations, customer relations, and decision-making. In every industry, technologies that are powered by artificial intelligence are helping organizations to achieve flexibility, modularity, and accuracy, allowing them to capitalize quickly on emerging market trends and develop new business models(Farayola et al., 2023).

But using AI to enhance business models is not without some challenges such as technical issues, standards and ethical issues and regulatory issues. Achieving transparency, trustworthiness, and conformance with organizational objectives in AI systems call for proper management of the team's technological innovation. Since AI is rapidly becoming the key to business efficiency, innovation, and competitive advantage, the need to acquaint oneself with the theory and practice of its application grows paramount(Moore, 2023).

The purpose of this research is to assess the relationship between AI and business model innovation, with specific consideration for how AI can affect operational performance, value creation, and organizational design. This research aims at offering a better understanding on how businesses can successfully implement and utilize the AI while considering its drawbacks based on the critical evaluation of the existing theories and frameworks.

Literature Review

Economic Sciences
https://economic-sciences.com
ES (2025) 21(2), 283-288| ISSN:1505-4683

The theoretical and empirical evidence regarding the impact of AI on business model change is presented, proving that it may have a significant impact on the levels of effectiveness, value generation, and business plans. The following review aims to provide a theoretical and practical analysis of the main aspects of AI to consider in contemporary business settings.

1. Artificial Intelligence and Business Model Innovation

AI has changed conventional business models by displacing them with dynamic data-oriented structures from the previously static ones. The essence of AI models addresses the learning and scale of SaaS implementation, which is similar to the cloud-based SaaS model that offers continuous learning for businesses. Such dynamic adaptation enhances the concept of agility, which is characterized by real-time operation with AI providing immediate decision-making tools(Hossain et al., 2024).

Moreover, the ability to process and moderate big datasets has also put AI in the middle of value delivery. AI increases firms' scale and supply chain management by repositioning the firm around a digital structure, allowing it to leap over traditional barriers. These innovations redefine customer value propositions by integrating customer analytics and personalized interactions with the customers.

2. Ethical and Regulatory Considerations

Ethical issues in AI implementation are central to addressing business model innovation concerns. The use of data analytics by AI technology presents issues to do with accountability of algorithms, privacy, and fairness. There are ethical principles such as AI-led ethical digital transformation that can act as guides in the right implementation of AI while at the same time avoiding to lose the organizational culture(Martins, 2024).

The example of legislation including the European Data Act shows that the regulation plays an important role in the AI implementation. International data-sharing requirements must be aligned, and incentives should be provided that will promote innovation in line with the legal requirements. To ensure that consumers trust their products, and organizations can sustain growth, companies need to understand and deal with these regulations.

3. Organizational Efficiency and Stabilization

It is common knowledge that AI can help improve operations in areas such as manufacturing and the oil and gas sector. The integration of artificial intelligence with inspection tools and quality control systems in a comprehensive approach shows that it can be used to reach the goal of no-defect manufacturing and enhance the production line. In this context, it is important to note that applications of AI-driven systems reduce risks and enhance safety both for operations and employees(Burström et al., 2021).However, for AI to have its optimal effect, it needs to be integrated across the functions. Spaces that bring together IT, business people, and data teams lead to the development of solutions that are both feasible and sustainable at scale.

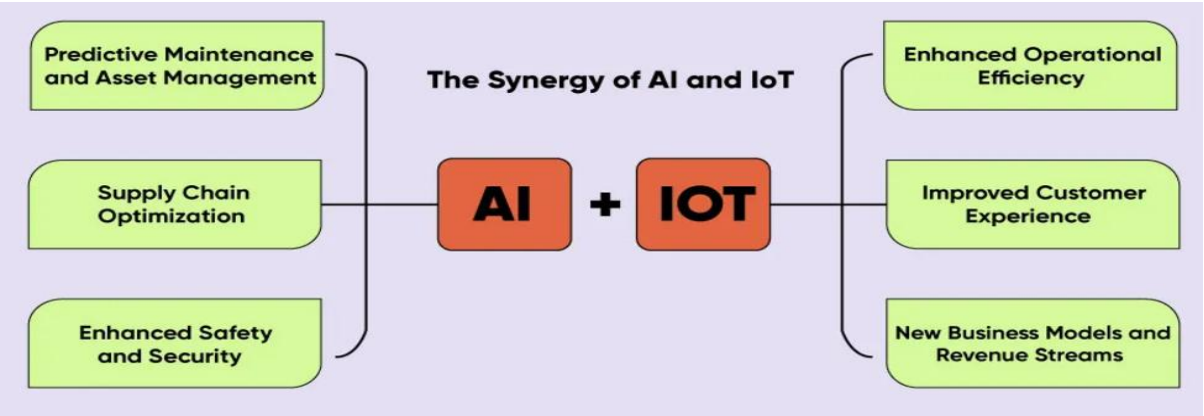

Figure 1: Integration of AI and IoT for Innovation in Startup Business

Economic Sciences
https://economic-sciences.com
ES (2025) 21(2), 283-288| ISSN:1505-4683

(Source: Quokka Labs, 2024)

4. Customer Interaction and Market Segmentation

Chatbots and predictive analytics are AI technologies that transform the customer engagement by making it more significant and unique. They improve the customers' experience as the business gets to gain important information on the consumers, thus achieving a competitive advantage.

In addition, AI provides the flexibility needed to seize opportunities that may arise in the market and meet new customer needs. This flexibility is particularly essential for SMEs and startups since they use artificial intelligence to reimagine competitive advantages and increase the size of their consumer base.

5. Possible Strategies and Organizational Change

This means that the introduction of AI requires a complete rethink of organizational structures and leadership approaches. Digital convergence, supported by AI, is centered on the integration of technology within business activities to deliver strategic value proposition. The executive sponsors are responsible for influencing the culture, enhancing the skills of the employees, and integrating AI with the organizational strategy(MohammadiLanbaran et al., 2024).

Thus, by putting AI into the role of both an instrument and a change-maker, it is possible to manage the challenges of digital transformation within an organisation and stay both ethical and strategic. It is for this reason that this paper has established that technological capability and human insight are inter-teammates in making AI a success.

Data and Variables

This research employs secondary qualitative research method, whereby data is gathered from relevant literature, magazines, journals and published articles. The work is centered on aspects of quality like organizational agility, ethical issues in AI implementation, managerial decision making, and value network change. These variables are used to examine how the AI technologies affect business model change and the ethical and operational aspects. Using rich, context dependent, qualitative data this study aims to offer a detailed insight into the relation between AI and business practices and the ethical and strategic issues arising from this.

Methodology and Model Specification

This study adopts a secondary qualitative research methodology and uses thematic analysis to analyze the theoretical and practical aspects of AI-based business models. The use of critical frameworks from the literature is informed by ethical decision-making, business model configuration and transformation, and the changing nature of AI in organizations.

In this context, the paper uses the "AI-led ethical digital transformation framework" to evaluate how the application of AI can be ethically implemented in organizations. This framework assesses the process of change driven by AI using a predefined set of criteria that include the ethical perspective, the shift of roles within value delivery networks, and emergence of new paradigms for value creation. Also, the study builds on the dynamic adaptation model, which shows AI's ability to transform companies from rigid business structures to data-driven, dynamic organizations.

Data is obtained from empirical research papers from peer-reviewed journals, best practices of AI applications in various sectors, and research reports. The qualitative data is analyzed by content analysis to determine patterns and themes that explain the application of AI in ethical practices, operational efficiency, and organizational agility. Some of the important issues are the ethical risks of employing AI, the ways in which AI can be used for enhancing interactions with the customers, the changes AI brought to leadership patterns and organizational culture.

Empirical Results

The empirical analysis of the AI based business models is based on the thematic analysis of the collected qualitative data from the secondary sources including journal articles, case studies and reports. The following section of the paper offers a discussion of the outcomes of the study, with an emphasis on four major areas: organizational change activated by AI, business model innovation

Economic Sciences
https://economic-sciences.com
ES (2025) 21(2), 283-288| ISSN:1505-4683

influenced by AI, and the moral implications of AI. Using the case and the toolkits like the "AI led ethical digital transformation framework" and the dynamic adaptation models, the analysis reveals how AI is redesigning business activities, value propositions and managerial decisions.

Key Themes and Findings

Ethical implication of integrating Artificial Intelligence in organizations

AI integration poses major ethical questions, especially about responsibility and disclosure, along with issues of bias in business algorithms. The "AI-led ethical digital transformation framework" shows how organizations are managing the ethical challenges of AI in terms of transparency, bias, and data protection. The framework highlights the fact that organizations should incorporate ethical decision-making frameworks into the use of AI technologies to promote the public good and mitigate the risks. Many companies have established ethics boards and AI ethics policies to ensure that the AI system is ethical and in line with organizational standards.

Dynamism of the business model adaptation

AI business models are interactional by nature and can be easily adjusted to the changing market and technological environment. According to the dynamic adaptation model, AI feature of data handling and analysis enables organizations to be adaptive. Companies have moved from linear, rigid models to those based on data, which allows them to change the processes of a business immediately. The results suggest that firms that implement AI are more adaptable in their decision-making process, especially in procurement, customer relations, and new product design(Aagaard and Tucci, 2024). This transformation is not only on the technological front, but on the social front, culture, and leadership requiring a 'new' digital and data mindset.

Effects on Leadership and Decision Making

AI is changing the work of managers and leaders, including in organizations and sectors that are in the process of digital transition. AI makes the work of managers easier because it gives predictions, trends and customer specific information. But as pointed out in various papers, there is also a need to change leadership approaches whenever there is integration of AI. AI is a complex phenomenon which requires not only technical competence but also awareness of the ethical, social, and organizational aspects of leadership. The findings imply that leadership of AI should be approached by integrating technical progress with humanistic solutions and use AI as an instrument to enhance human intellect.

Change of Value Webs and Positions

AI integration results in changes to the positions of companies within value networks and changes in the roles played by individual subjects within these networks. According to the literature, AI creates new forms of partnerships, new collaborations, and, in fact, often new value propositions. For instance, such applications enable organizations to provide 'Ethics as a Service' where companies encourage the use of ethical business models as provided by algorithms(Silva and Sehnem, 2022). The study demonstrates that the firms' adoption of AI does not only result in the innovation of product and services offered but also in organizational processes and partnerships, which create added value and competitive edge. Most industries are experiencing a shift in their roles and responsibilities due to AI; suppliers, distributors, and consumers are experiencing new value propositions based on automation, data sharing, and customer segmentation.

Sustainability and artificial intelligence startups

New AI startups are on the rise to become essential actors for the sustainable social development of the service sector. The conclusions drawn show that those startups, which are primarily interested in the topics of AI's positive impact, can address challenges such as socioeconomic inequality, environmental concerns, and job availability. Ethical concerns are at the core of the AI startups' approach to development and their products' purpose is to support the sustainable growth of the company with reference to the general social goals. According to the study, the benefits of AI in generating employment, decent work, and equitable development are emerging as a significant factor for both existing firms and new entrants.

Economic Sciences
https://economic-sciences.com
ES (2025) 21(2), 283-288| ISSN:1505-4683

Table 1: Thematic Analysis of AI-driven Business Models

Theme	Description	Key Findings
Ethical Considerations in AI	Ethical concerns related to transparency, accountability, and algorithmic bias in AI integration.	Organizations are adopting ethical frameworks for AI implementation, focusing on transparency, fairness, and privacy protection. Ethics boards are established to ensure AI alignment with societal values.
Dynamic Business Model Adaptation	AI enables businesses to transition from static to dynamic, data-centric models that allow real-time operational adjustments.	AI enhances organizational agility by providing real-time insights for decision-making, improving areas like customer service, supply chain management, and product development.
Leadership and Decision-Making	AI's role in transforming leadership strategies and decision-making processes, enhancing predictive analytics and market insights.	Leaders need to balance AI's technological capabilities with human-centered decision-making. AI empowers leaders to make informed decisions while promoting innovation and strategic foresight(Allioui and Mourdi, 2023).
Transformation of Value Networks	AI's impact on the reconfiguration of value networks, creating new roles and collaborations within business ecosystems.	AI fosters new partnerships, enhances "Ethics as a Service," and transforms traditional value chains. Businesses are aligning value creation with ethical and societal considerations.
Sustainability and AI Startups	AI startups contributing to sustainable development through innovative and socially responsible AI applications.	AI startups are addressing global challenges like inequality, sustainability, and job creation, aligning their innovations with the UN's sustainable development goals.

(Source: Author's compilation)

Analysis

The thematic analysis shows that the business models based on AI are becoming new practices for businesses in the economy that have critical implications for ethics, leadership, and value proposition. AI is not just a technical concern, and organizations apply different frameworks addressing the essence of ethical considerations for AI. The utilization of data for real-time decision making and constant reviewing of business procedures is a point that makes it easier to notice AI's capability of driving dynamic adaptation(Chui et al., 2021). But it is worthy to note that this transformation is not an easy task. Organizations must learn the process of improving their leaders and employees, to understand the challenges of AI, and when to apply it for the right purposes, called responsible AI.

Another important research implication is the identification of the role of AI in changing value networks. The study reveals that AI is driving emergence of new forms of collaboration and innovation including partnership such as 'Ethics as a Service'. These are not only new technologies but new strategies which companies are adopting to set them apart from others through their sustainability and social responsibility. It also shows that AI startups are possible, and AI can be used to create sustainable social development, especially in such sectors where innovation is required to solve global problems.

In conclusion, the empirical evidence points out that AI is not only an operational enabler but also a disruptive force that shapes the organization's structures and leadership as well as business model designs. AI needs to be implemented into business environments with an understanding that it is a technology that must be implemented in a way that create value that is sustainable, and is ethical.

Conclusion

This empirical study shows how AI is changing current business modes and practices, stressing on the aspects of ethics, flexibility, and sustainability. Artificial intelligence business models enable organizational adaptability, improve decisions, and establish new value propositions, making industries evolve. However, there is a need to address the ethical question that arise when AI is adopted in

businesses for instance; transparency, fairness, accountability. While organizations press on with the integration of AI the need to ensure that AI is integrated in a manner that benefits the organization and the society cannot be overemphasized. In the future, integration of AI is projected to advance in the future, including the topics like AI ethics, AI transparency and AI for the sustainable development goals. There is also the question of how businesses will have to be ready for future discontinuities in the AI technology domain and how they have to be proactive in modifying their models in order to sustain competitive advantage.

References

1. Farayola, O.A., Abdul, A.A., Irabor, B.O. and Okeleke, E.C., 2023. Innovative business models driven by ai technologies: a review. *Computer Science & IT Research Journal*, *4*(2), pp.85-110.
2. Moore, B.A., 2023. From Startups to Global Enterprises: Exploring the Role of Entrepreneurship, Marketing, Internet of Things, and Artificial Intelligence.
3. Hossain, F., Ahmed, G.S., Shuvo, S.P.P., Kona, A.N., Raina, M.U.H. and Shikder, F., 2024. Unlocking artificial intelligence for strategic market development and business growth: innovations, opportunities, and future directions. *Edelweiss Applied Science and Technology*, *8*(6), pp.5825-5846.
4. Martins, M.M.R., 2024. Startup Guide to AI: Integrating Technology for Business Success. *Valley International Journal Digital Library*, pp.1264-1274.
5. Burström, T., Parida, V., Lahti, T. and Wincent, J., 2021. AI-enabled business-model innovation and transformation in industrial ecosystems: A framework, model and outline for further research. *Journal of Business Research*, *127*, pp.85-95.
6. Quokka Labs. (n.d.). *AI and IoT in Business Innovation- Real-Life Examples*. [online] Available at: https://quokkalabs.com/blog/ai-and-iot-in-business/.
7. MohammadiLanbaran, N., Naujokaitis, D., Kairaitis, G., Jenciūtė, G. and Radziukynienė, N., 2024. Overview of Startups Developing Artificial Intelligence for the Energy Sector. *Applied Sciences*, *14*(18), p.8294.
8. Aagaard, A. and Tucci, C., 2024. AI-Driven Business Model Innovation: Pioneering New Frontiers in Value Creation. In *Business Model Innovation: Game Changers and Contemporary Issues* (pp. 295-328). Cham: Springer International Publishing.
9. Silva, T.H. and Sehnem, S., 2022. Industry 4.0 and the circular economy: integration opportunities generated by startups. *Logistics*, *6*(1), p.14.
10. Allioui, H. and Mourdi, Y., 2023. Unleashing the potential of AI: Investigating cutting-edge technologies that are transforming businesses. *International Journal of Computer Engineering and Data Science (IJCEDS)*, *3*(2), pp.1-12.
11. Chui, M., Collins, M. and Patel, M., 2021. The Internet of Things: Catching up to an accelerating opportunity.