International Journal of Commerce and Management Research
www.managejournal.com
ISSN: 2455-1627
Received: 02-09-2025, Accepted: 02-10-2025, Published: 17-10-2025
Volume 11, Issue 10, 2025, Page No. 13-15

AI in social entrepreneurship and sustainable innovation

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Abstract
Artificial Intelligence (AI) has emerged as a disruptive force, transforming industries and reshaping the ways in which entrepreneurs create and deliver value. In the field of social entrepreneurship, AI has become a powerful tool to balance social mission with business viability. This paper investigates the role of AI in driving sustainable innovation within social ventures, with a focus on education, healthcare, and environmental solutions. Drawing on primary data collected from 15 students, 10 teachers, 5 business school owners, and 5 business people (N=35), the study highlights the perceived benefits, opportunities, and challenges of adopting AI. Results suggest that AI significantly improves resource allocation, decision-making, and sustainability practices, while simultaneously raising concerns about ethical risks, digital equity, and implementation barriers. The findings provide insights for social entrepreneurs, educators, and policymakers aiming to integrate AI into sustainable business models.

Keywords: Artificial Intelligence, social entrepreneurship, sustainable innovation, primary data, ethical AI, education

Introduction

In the 21st century, entrepreneurship is no longer limited to profit-making; it has evolved into a dynamic mechanism for addressing social challenges. Social entrepreneurs aim to create ventures that solve societal problems while ensuring long-term sustainability. However, limited resources, scalability issues, and lack of access to real-time data have historically constrained the effectiveness of social entrepreneurship.

Artificial Intelligence (AI) has entered this landscape as a game changer. AI enables predictive analytics, automation, pattern recognition, and natural language processing, all of which can assist social entrepreneurs in creating efficient, scalable, and impactful solutions. For instance, AI is helping non-profits forecast resource needs, startups build low-cost healthcare diagnostic tools, and educational ventures personalize learning for disadvantaged students.

The present study addresses three key research questions:

1. How is AI being integrated into social entrepreneurship models?
2. What role does AI play in enabling sustainable innovation?
3. What opportunities and challenges arise from AI adoption in this context?

Lterature Review

1. AI in Social Entrepreneurship

Scholars have recognized AI's role in enabling entrepreneurs to identify opportunities and analyze complex social problems (Smith, 2021) [3]. Tools such as machine learning algorithms and AI-driven data visualization help social ventures make evidence-based decisions.

2. AI and Sustainable Innovation

According to Kumar & Patel (2020) [2], AI supports sustainable innovation by minimizing waste, optimizing resources, and enhancing renewable energy solutions. In emerging economies, AI has enabled frugal innovation — developing affordable solutions without compromising on effectiveness.

3. Ethical Concerns and Barriers

Brown & Davis (2019) [1] caution that AI-based entrepreneurship raises concerns related to bias, data privacy, and exclusion of marginalized communities. These barriers must be addressed to ensure inclusive innovation. The literature emphasizes that while AI has transformative potential, it must be harnessed responsibly to avoid deepening inequalities.

Methodology

1. ResearchDesign

A mixed-method approach was adopted, combining quantitative data collection through surveys with qualitative interviews to capture perceptions across stakeholder groups.

2. Sample

The study used purposive sampling with respondents drawn from academic and entrepreneurial settings. The total sample (N = 35) included:

- 15 studens
- 10 teachers
- 5 business school owners
- business people/entrepreneurs

3. Data Collection

Data was collected using an online questionnaire (Google Form) with 20 items (Likert scale and open-ended). The survey focused on four domains:

1. AI in opportunity recognition and innovation
2. AI for sustainability and social impact
3. Barriers and challenges in AI adoption
4. Ethical considerations

4. DataAnalysis

Quantitative data analyzed through descriptive statistics. Graphical representation used bar charts and pie charts. Qualitative responses were coded into themes: opportunities, sustainability, and challenges.

Findings and Discussion

1. Quantitative Findings

Survey results (N = 35) revealed high optimism about AI's role in social entrepreneurship.

Aspect	Students (n=15)	Teachers (n=10)	B-School Owners (n=5)	Business People (n=5)
AI improves resource allocation	67%	70%	80%	60%
AI enhances decision-making	73%	75%	85%	65%
AI promotes sustainability	60%	68%	80%	55%
AI creates ethical challenges	58%	62%	65%	70%

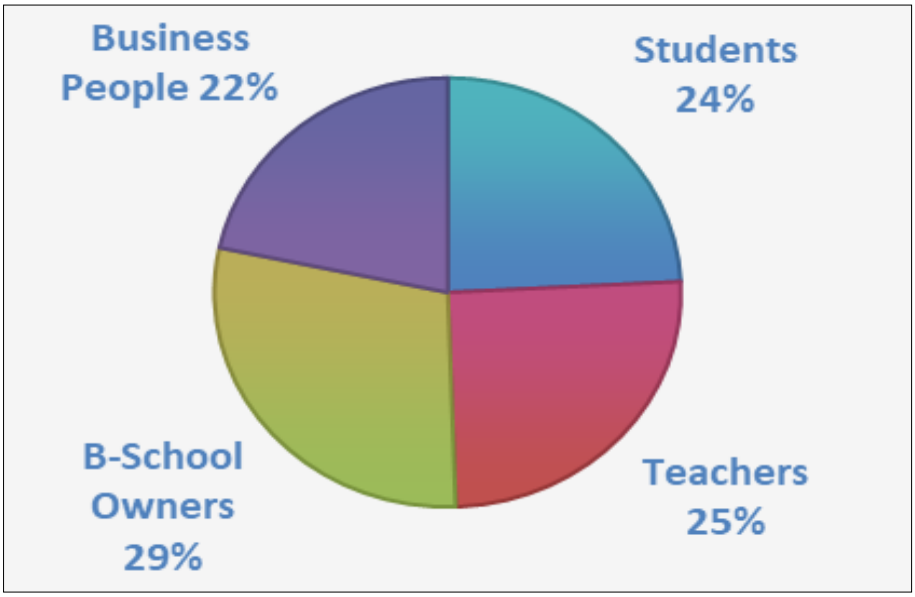

Fig 1: Pie Chart comparing AI improves resource allocation

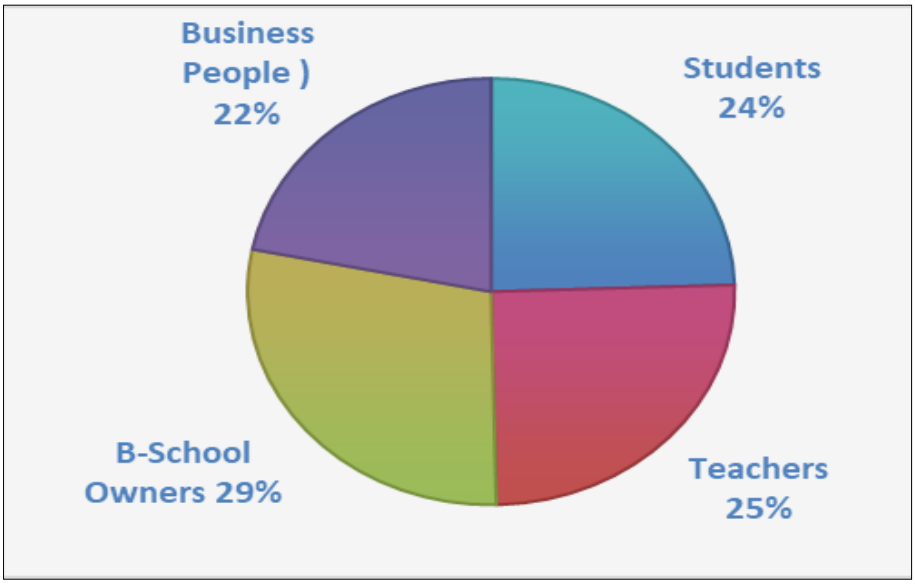

Fig 2: Pie Chart comparing AI enhances decision-making

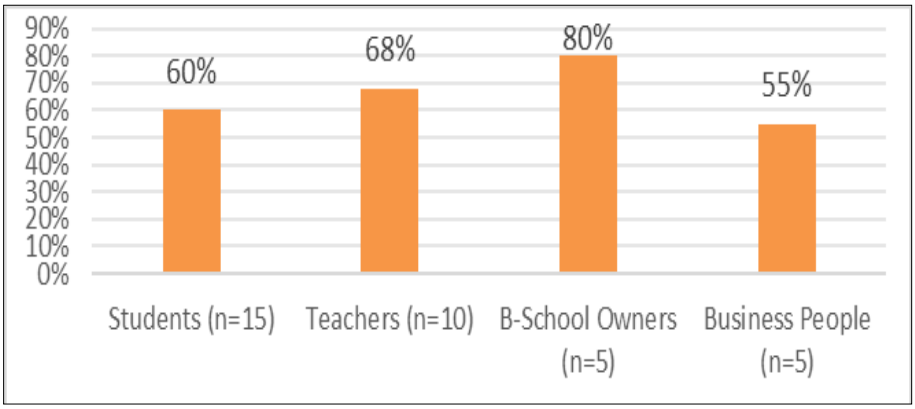

Fig 3: Bar Diagram comparing AI promotes sustainability

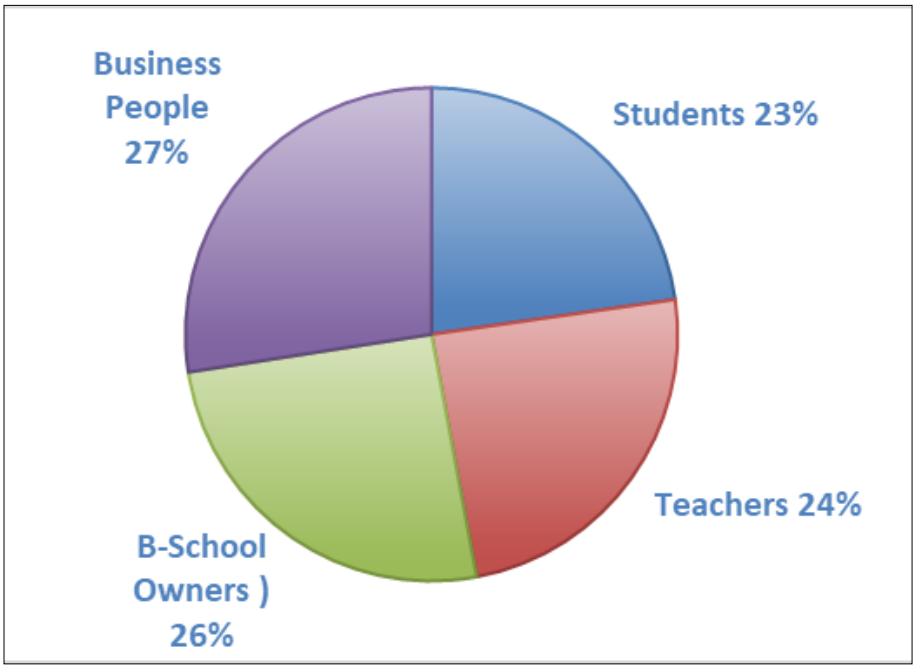

Fig 4: Pie Chart comparing AI creates ethical challenges

2. Qualitative Insights

- **Students:** Emphasized AI's potential for personalized learning and entrepreneurship training.
- **Teachers:** Saw AI as a way to build sustainable teaching models and measure social impact.
- **Business School Owners:** Highlighted AI's role in curriculum design, admissions, and institutional strategy.
- **Business People:** Noted AI's value in market forecasting and customer engagement, but stressed the cost barrier.

Conclusion

AI has the potential to revolutionize social entrepreneurship and sustainable innovation. Findings from primary data reinforce that AI can enhance decision-making, improve resource allocation, and drive sustainability in education and business ventures. However, successful adoption requires awareness, ethical safeguards, and policy support.

This study highlights the growing role of AI in advancing social entrepreneurship and sustainable innovation. Insights from students, teachers, business owners, and professionals show that AI supports better decision-making, resource efficiency, and socially driven business models. While opportunities are clear—ranging from education to enterprise growth—challenges such as ethical risks and access gaps remain.

Overall, AI emerges as both a technological enabler and social catalyst, with the potential to align business goals with community and environmental needs. To maximize impact, collaboration among educators, entrepreneurs, and policymakers is essential, ensuring that AI-driven innovation remains ethical, inclusive, and sustainable Future research should focus on developing frameworks for responsible AI adoption in social entrepreneurship, especially in developing economies where the digital divide remains a barrier.

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