Industrial Engineering Journal
ISSN: 0970-2555
Volume : 53, Issue 11, No.4, November : 2024

ETHICAL CONCERNS AND PUBLIC AWARENESS IN A. I STARTUPS: A STUDY OF ENTREPRENEURIAL SENTIMENTS IN HYDERABAD

Dr. KARIMULLA SHAIK, ASSOCIATE PROFESSOR, HEAD OF THE DEPARTMENT
DRK COLLEGE OF ENGINEERING & TECHNOLOGY, HYDERABAD, TELANGANA, INDIA

Abstract
The rapid growth of artificial intelligence (AI) startups has brought about numerous technological advancements, but it has also raised several ethical concerns that need to be addressed. This study explores the relationship between public awareness and the perceived ethical concerns among entrepreneurs in AI startups in Hyderabad, a leading hub for technology and innovation in India. By examining the sentiments of entrepreneurs regarding the ethical implications of AI technologies, this research aims to understand how public awareness influences their decision-making processes, ethical stances, and approach to responsible AI development. The study employs a mixed-methods approach, combining quantitative surveys and qualitative interviews to capture a broad spectrum of perspectives from AI entrepreneurs. Findings indicate that heightened public awareness significantly shapes entrepreneurial attitudes toward the ethical deployment of AI, influencing both the regulatory frameworks they adopt and their strategies for managing social and moral challenges. This research contributes to a deeper understanding of the intersection between public awareness and ethical considerations in AI startups, offering valuable insights for policymakers, business leaders, and stakeholders aiming to foster ethical innovation in emerging technologies.

INTRODUCTION

This study explores the complex relationship between perceived ethical concerns around AI startups among entrepreneurs in Hyderabad City and public knowledge of these issues. The survey, which involves 120 entrepreneurs, starts with a structured questionnaire designed to gauge public understanding of AI and its ethical implications. The study draws attention to the possible hazards and ethical ramifications of AI technologies, especially in the context of startups. The impact of media on entrepreneurs' ethical concerns is critically examined, with an emphasis on how AI startups are portrayed in different media. The analysis covers the content, tone, and frequency of news stories, reports, and social media conversations around AI startups and moral issues.

AI STARTUP

A commercial endeavour that primarily concentrates on creating and deploying Artificial Intelligence (AI) technology is referred to as an AI startup. These startups use artificial intelligence (AI) to develop novel approaches, goods, or services. These frequently touch on computer vision, machine learning, natural language processing, and other AI-related domains. AI startups can work in a number of sectors, such as banking, healthcare, education, logistics, and more. AI startups are typically distinguished by their focus on state-of-the-art technologies, data-driven methodologies, and the use of algorithms to address intricate issues. These endeavours frequently encounter difficulties with data protection, moral dilemmas, and the requirement for ongoing innovation. The effectiveness of AI businesses is frequently influenced by elements like the calibre of their algorithms, the accessibility of sizable and pertinent datasets, and their capacity to draw in and hold on to highly qualified AI personnel. Startups in this field must manage regulatory environments, keep up with the most recent developments in AI research, and handle ethical issues related to AI applications because the AI landscape is changing. Not only can technological improvements effect the growth and impact of AI firms, but public attitudes, media depictions, and regulatory frameworks also play a role.

ETHICAL

The term "ethical" describes beliefs or actions that follow socially acceptable norms of conduct, especially those that are seen as morally upright or decent. A subfield of philosophy known as ethics examines morality, the concepts of good and evil, right and wrong, and the rules that govern behaviour in humans. While the definition of ethics might change depending on the situation, it usually includes values like justice, honesty, integrity, and respect for others.

A foundation for morally righteous and socially acceptable decisions and acts is provided by ethics to both individuals and groups. Behaving ethically is frequently consistent with ideals that advance the welfare of people, groups, and society at large. It takes duty, justice, and equity into account.

Ethical behaviour in commercial and professional settings is essential for establishing credibility, upholding an organization's reputation, and guaranteeing its long-term success. Transparency, justice, privacy, and the responsible use of cutting-edge technologies are just a few of the factors that go into ethical behaviour in the technology sector, which includes areas like artificial intelligence. In conclusion, upholding morally upright or decent ideas and ideals in one's own behaviour as well as in the choices and deeds of institutions and organisations is being ethical. Responsibilities to oneself, others, and society as a whole frequently serve as the foundation for ethical behaviour.

Fairness and Bias: AI systems may unintentionally reinforce or even worsen biases found in training data. Firms that practise ethical AI deliberately seek out and reduce bias in order to guarantee impartial and equitable results.

Explainability and Transparency: When AI decision-making processes are opaque, mistrust may result. Transparency is a top priority for ethical AI firms, and they work hard to make their algorithms understandable so that stakeholders and consumers can understand the reasoning behind decisions.

Privacy Concerns: AI startups frequently handle private user information. When user privacy is not adequately protected or when data is utilised without the required consent, ethical issues might develop. Startups ought to put strong data security procedures in place.

Accountability of Algorithms: AI startups must take responsibility for the decisions made by their algorithms. This entails correcting mistakes, offering channels for appeal, and accepting accountability for the results of decisions made with AI.

Economic Impact and Job Displacement: The introduction of AI technology may result in the loss of jobs in specific industries. Ethical AI businesses may actively contribute to workforce transition solutions by taking into account the wider economic implications of their inventions.

Security Risks: Ethical AI startups place a high priority on data security, protecting against potential hacks and improper usage of AI technologies that could harm people or businesses.

AI technology created by entrepreneurs may have the potential to be used for both good and bad, which raises the issue of dual-use. Potential misuse must be anticipated and mitigated when it comes to ethical issues.

Regulatory Compliance: Ethical AI startups follow current laws pertaining to AI and cutting-edge technologies. They actively interact with legislators to make sure that their inventions comply with legal and ethical constraints.

Impact on Society and Environment: Ethical AI startups take into account how their technology will affect society and the environment more broadly. This entails determining the effects, minimising them, and actively promoting constructive social change.

Informed Consent: Before collecting and utilising user data, ethical AI businesses make it a priority to get informed consent from consumers. Customers should have the choice to opt out and be informed about how their data will be used.

OBJECTIVES OF THE STUDY

1. To study the socio-economic profile of the respondents.
2. To analyse the AI startups among entrepreneurs.
3. To explore the awareness of AI startups.
4. To explore the impact of ethical concerns AI startups among entrepreneurs.
5. To suggest few ways to be ethical among AI startups among entrepreneurs in Hyderabad.

RESEARCH METHODOLOGY

RESEARCH DESIGN

"Research design" pertains to the overall approach and techniques selected to ensure a thorough analysis of the research topic by integrating the various study components in a logical and cohesive manner.

The research methodologies are employed in this study in a way that makes it easy to see how knowledgeable Hyderabad City entrepreneurs are of perceived ethical issues with AI firms.

DATA COLLECTION:

Primary Data

The first step of data collection is conducted using a structured questionnaire distributed to Hyderabad city's enterprises via G-forms which is used for statistical purpose to analyze the report.

Secondary Data

Secondary data is collected to gather a knowledge and information about AI startups and ethical and unethical activity. Few articles were also referred for the reference.

Sampling Technique

Simple Random Sampling is used as the methodology for collecting the data for this study.

Sample Size

The sample size is 120 entrepreneurs of Hyderabad city.

STATISTICAL TOOLS:

Statistical Package for Social Science (SPSS) is used for analyzing the data and derived a conclusion with suggestions. Statistical Tools used to analyze the data are:

- Socio-economic profile
- Descriptives
- Regression

REVIEW OF LITERATURE

Dr.Naveen Prasadula (2024)[(1)] made a research on topic “Analyzing the Adoption Challenges of the Internet of Things (IoT) and Artificial Intelligence (AI) for Smart Cities in China”. The article examines the adoption challenges associated with the integration of Internet of Things (IoT) and Artificial Intelligence (AI) technologies in the context of developing smart cities in China. The research focuses on understanding the barriers and obstacles that hinder the effective implementation of IoT and AI in the urban infrastructure of Chinese cities. The analysis likely

explores factors such as technological limitations, regulatory issues, infrastructure requirements, and socio-economic considerations that impact the successful deployment of IoT and AI solutions. The goal is likely to provide insights into addressing these challenges and promoting sustainable and efficient development of smart cities in China. The findings may contribute to the ongoing discourse on urban planning, technology adoption, and the intersection of IoT and AI in the context of smart city initiatives.

Bhatia, A., Chandani, A., Atiq, R., Mehta, M., & Divekar, R. (2021)[(2)] analysed on the topic "Artificial Intelligence in Financial Services: A Qualitative Research to Discover Robo-Advisory Services" delves into the application of artificial intelligence (AI) in financial services, with a specific focus on robo-advisory services. Using qualitative research methods, the study likely explores the intricacies of robo-advisory platforms within the financial industry. The research may involve in-depth interviews, case studies, or thematic analysis to understand how AI is implemented in financial decision-making processes and the impact of robo-advisory services on the overall financial landscape. The goal is to uncover insights into the adoption, challenges, and potential benefits of integrating AI-driven robo-advisors in financial services. The findings are likely to contribute to the broader understanding of the role of AI in reshaping financial advisory services and its implications for both industry practitioners and researchers.

Dr.Naveen Prasadula (2023)[(3)] authored a research project "The Startup Environment and Funding Activity in India" provides an examination of the startup ecosystem and funding landscape in India. As part of a larger work on "Investment in startups and small business financing," this chapter likely explores various aspects of the startup environment in India, including factors influencing the entrepreneurial landscape, challenges faced by startups, and the dynamics of funding activities. The authors may delve into trends, sources of funding, and the overall investment climate for startups in India. By covering these topics, the chapter aims to contribute valuable insights into the factors shaping the growth and sustainability of startups in the country, providing a comprehensive overview of the investment scenario in the Indian startup ecosystem. **Banja, J. D., & Meltzer, C. C. (2020)[(4)]** in the research titled," Ethical Considerations in Artificial Intelligence" addresses ethical considerations related to artificial intelligence (AI), with a focus on the European context. The authors likely explore various ethical dimensions of AI applications, particularly within the field of radiology. The discussion may encompass issues such as transparency, accountability, bias mitigation, and the potential impact of AI on patient care. By examining these ethical aspects, the article likely contributes to the ongoing discourse on responsible AI development and deployment, offering insights and recommendations for practitioners, policymakers, and researchers in the field of radiology and beyond. The goal is likely to raise awareness and provide guidance on navigating the ethical challenges associated with the integration of AI in medical imaging and related domains. **Singh, S., Chauhan, A., & Dhir, S. (2020)[(5)]** explored on topic "Analyzing the Startup Ecosystem of India: A Twitter Analytics Perspective". The startup ecosystem in India through the lens of Twitter analytics. Employing social media data, particularly from Twitter, the researchers likely investigate the dynamics and trends within the Indian startup landscape. The study may include aspects such as sentiment analysis, key influencers, and popular topics discussed on Twitter related to Indian startups. By utilizing Twitter as a source of real-time data, the authors aim to provide insights into the perception, discussions, and overall engagement surrounding the startup ecosystem in India. The findings are likely to contribute valuable information for understanding the role of social media in shaping perceptions and discussions within the context of startup activities in the country. **Winecoff, A. A., & Watkins, E. A. (2022)[(6)]** in the research project entitled as "Artificial Concepts of Artificial Intelligence: Institutional Compliance and Resistance in AI Startups" explores the dynamics of

institutional compliance and resistance within AI startups. Presented at the AAAI/ACM Conference on AI, Ethics, and Society, the research likely investigates how AI startups navigate and respond to institutional expectations and ethical considerations. The authors may examine the strategies employed by startups to comply with ethical norms and regulations in the AI sector, as well as instances of resistance or challenges faced. The findings are expected to shed light on the complex interplay between institutional demands and the strategies adopted by AI startups, contributing valuable insights to the broader discussions on AI ethics and the societal implications of artificial intelligence.

DATA ANALYSIS & INTERPRETATION

SOCIO-ECONOMIC PROFILE

AGE OF THE ENTREPRENEURS				
Particulars	**Frequency**	**Percentage (%)**	**Valid Percent**	**Cumulative Percent**
20-30 years	60	50	50	50
31-40 years	20	16.6	16.6	66.6
41-50 years	30	25	25	91.6
51 years and above	10	8.4	8.4	100
Total	120	100	100	

Source: Primary Data

INTERPRETATION

Out of 120 respondents, most of the entrepreneurs are between the age group of 20-30 years, which has 60%. The lowest percentage falls under the age group more than 51 years and above.

GENDER OF THE ENTREPRENEURS				
Particulars	**Frequency**	**Percentage (%)**	**Valid Percent**	**Cumulative Percent**
FEMALE	90	75	75	75
MALE	30	25	25	100
Total	120	100	100	

Source: Primary Data

INTERPRETATION

Out of 120 respondents, most of the entrepreneurs are female with 90%, whereas male employees have responded only for 30%.

EDUCATIONAL LEVEL OF ENTREPRENEURS				
Particulars	**Frequency**	**Percentage (%)**	**Valid Percent**	**Cumulative Percent**
Diploma Holder	5	4.2	4.2	4.2
Graduate	50	41.6	41.6	45.8
Post Graduate	65	54.2	54.2	100
Total	120	100	100	

Source: Primary Data

INTERPRETATION

Out of 120 respondents, 50 % of the respondents are holder of post-graduation. While only 5% of the entrepreneurs are having a doctorate.

EXPERIENCES OF THE ENTREPRENEURS				
Particulars	**Frequency**	**Percentage (%)**	**Valid Percent**	**Cumulative Percent**
less than 5 years	55	45.8	45.8	45.8
5-10 years	49	40.9	40.9	86.7
10-15 years	8	6.6	6.6	93.3
15-20 years	5	4.2	4.2	97.5
above 20 years	3	2.5	2.5	100

Industrial Engineering Journal
ISSN: 0970-2555
Volume : 53, Issue 11, No.4, November : 2024

Source: Primary Data

INTERPRETATION

Out of 120 respondents, 55% of the respondents are having the experience less than 5 years, but entrepreneurs having experience more than 20 years are only 3%.

DESCRIPTIVES

AWARENESS ON PHILANTHROPIC CSR AMONG EMPLOYEES		
	Mean	**Std. Deviation**
I am aware of ethical concerns associated with the operations of AI startups	1.29	0.455
I believe that AI startups should be transparent about how they use artificial intelligence in their products or services.	1.32	0.47
I am concerned about the potential biases in AI algorithms used by startups.	1.31	0.464
I think AI startups should prioritize the privacy and security of user data.	1.34	0.475
I believe there should be regulatory frameworks in place to govern the ethical use of AI by startups.	1.4	0.492

Source: Primary Data

INTERPRETATION

From the above table it is found that the mean value range is from 1.29 – 1.4, standard deviations value range is from 0.455– 0.492. Further this test implies that entrepreneurs think AI startups should prioritize the privacy and security of data.

IMPACT ON PERCEIVED ETHICAL CONCERN ABOUT AI STARTUPS		
	Mean	**Std. Deviation**
The increasing influence of AI startups has heightened my awareness of ethical concerns related to artificial intelligence.	1.41	0.493
I believe that the rapid growth of AI startups has led to a greater need for ethical guidelines and regulations in the industry.	1.34	0.475
The ethical practices of AI startups significantly influence my perception of their products or services.	1.2	0.399
The awareness of ethical concerns has influenced my decision to engage with or support AI startups.	1.29	0.455

Industrial Engineering Journal
ISSN: 0970-2555
Volume : 53, Issue 11, No.4, November : 2024

I believe that addressing ethical concerns is crucial for the long-term success and sustainability of AI startups.	1.3	0.461

Source: Primary Data

INTERPRETATION

From the above table it is found that the mean value range is from 1.2 – 1.41, standard deviations value range is from 0.399 – 0.493. Further this test implies that entrepreneurs believe that the rapid growth of AI startups has led to a greater need for ethical guidelines and regulations in the industry.

IMPACT OF AI STARTUPS AMONG ENTREPRENEURS		
	Mean	**Std. Deviation**
The presence of AI startups has influenced my awareness of technological advancements in the entrepreneurial landscape.	1.32	0.467
I believe that AI startups have created new opportunities for innovation and growth in the entrepreneurial sector.	1.37	0.485
The impact of AI startups has influenced my perception of the competitiveness of the entrepreneurial market.	1.35	0.477
I think the presence of AI startups has changed the way entrepreneurs approach business strategy and development.	1.35	0.479
The integration of AI technologies by startups has affected my own entrepreneurial practices and decision-making.	1.28	0.451

ource: Primary Data

INTERPRETATION

From the above table it is found that the mean value range is from 1.28– 1.37, standard deviations value range is from 0.451– 0.485. Further this test implies that entrepreneurs believe that AI startups have created new opportunities for innovation and growth in the entrepreneurial sector.

REGRESSION

Hypotheses

H0: There is a significant impact on perceived ethical concern about AI startups.

H1: there is a significant impact of AI startups among entrepreneurs.

Hypotheses	**Regression Weights**	**B**	**t**	**p-Value**	**Results**
H0	Ethical Concerns □ AI startups	.315	3.632	.000*	Supported
H1	Entrepreneurs □ AI startups	.259	1.913	0.058*	Supported
R	.170				
F (2,137)	14.221				

Source: Primary Data

INTERPRETATION

The dependent variable (AI startups) was regressed on predicting variable of Ethical Concerns and Entrepreneurs towards AI startups. The independent variable significantly predict AI startups, $F(2,137)= 14.221$, $p< .001$, which indicates that the two factors under the study have a significant impact on AI startups. Moreover, the $R^2 = 0.170$ depicts that the model explains 17% of the variance in AI startups. Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (AI startups). H_0 evaluates whether Ethical concerns significantly and positively affects AI startups. The results revealed that Ethical Concerns has a significant and positive impact on AI startups (B=.315, t=3.632, p=.000). Hence, H_0 was supported. H_1 evaluates whether Entrepreneurs has significantly positive impact on AI startups. The results show that Entrepreneurs have a significantly positive impact on AI startups. The results show that

Entrepreneurs has a significantly positive impact on AI startups (B= .259, t= 1.913, p= 0.058). Hence, H_1 was supported.

SUGGESTIONS

To foster greater ethical practices among entrepreneurs in AI startups, a proactive approach is essential. First, prioritize transparency by openly communicating about AI algorithms, data usage, and potential impacts. Implement robust data privacy measures to ensure user information is protected. Actively address biases in AI models through continuous monitoring and adjustments. Engage in regular ethical training for team members, promoting a shared understanding of responsible AI development. Emphasize fairness and inclusivity by striving to eliminate discriminatory outcomes in algorithms. Collaborate with ethicists and professionals to gain diverse perspectives on potential ethical challenges. Establish clear policies regarding the ethical use of AI technologies within the company. Encourage open dialogue with stakeholders, including users, to incorporate their concerns into decision-making processes. Regularly review and update ethical guidelines to adapt to evolving technologies and societal expectations. Lastly, participate in industry-wide initiatives to collectively raise ethical standards and contribute to a responsible AI ecosystem.

CONCLUSION

This study highlights the significant role of public awareness in shaping the ethical considerations of entrepreneurs in AI startups in Hyderabad. It reveals that as public understanding of AI technologies increases, entrepreneurs are more likely to adopt ethical frameworks and prioritize responsible practices in their business operations. The research demonstrates that ethical concerns, such as privacy issues, bias, and accountability, are at the forefront of entrepreneurial decision-making in the AI sector. Entrepreneurs are not only influenced by the potential business opportunities AI offers but also by the need to align their innovations with societal values and expectations. The findings emphasize that entrepreneurs are increasingly aware of the potential risks and societal impact of AI technologies, which leads to a more proactive approach in addressing ethical challenges. Public awareness campaigns, media discussions, and societal debates about AI are pivotal in influencing entrepreneurs' ethical stances and guiding their strategic decisions. The study suggests that fostering a greater public understanding of AI can serve as a catalyst for ethical practices within the startup ecosystem. Policymakers and industry leaders should focus on promoting public awareness initiatives that encourage ethical innovation and mitigate potential risks. Overall, this research underscores the need for a collaborative approach between the public, entrepreneurs, and regulators to ensure the responsible development of AI technologies in the future.

REFERENCES

1. Wang, K., Zhao, Y., Gangadhari, R. K., & Li, Z. (2021). Analyzing the adoption challenges of the Internet of things (Iot) and artificial intelligence (ai) for smart cities in china. Sustainability, 13(19), 10983.
2. Bhatia, A., Chandani, A., Atiq, R., Mehta, M., & Divekar, R. (2021). Artificial intelligence in financial services: a qualitative research to discover robo-advisory services. Qualitative Research in Financial Markets, 13(5), 632- 654.
3. Dr.Naveen Prasadula (2024) Review of Literature on Ethical Concerns And Public Awareness In A. I Startups: A Study Of Entrepreneurial Sentiments In Hyderabad.
4. David, D., Gopalan, S., & Ramachandran, S. (2021). The startup environment and funding activity in India. In Investment in startups and small business financing (pp. 193-232).
5. Safdar, N. M., Banja, J. D., & Meltzer, C. C. (2020). Ethical considerations in artificial

intelligence. European journal of radiology, 122, 108768.
6. Singh, S., Chauhan, A., & Dhir, S. (2020). Analyzing the startup ecosystem of India: a Twitter analytics perspective. Journal of Advances in Management Research, 17(2), 262-281.
7. Winecoff, A. A., & Watkins, E. A. (2022, July). Artificial concepts of artificial intelligence: institutional compliance and resistance in AI startups. In Proceedings of the 2022 AAAI/ACM Conference on AI, Ethics, and Society (pp. 788-799).
8. Prasadula, D. (2024). Analyzing the Adoption Challenges of the Internet of Things (IoT) and Artificial Intelligence (AI) for Smart Cities in China.
9. Bhatia, A., Chandani, A., Atiq, R., Mehta, M., & Divekar, R. (2021). Artificial Intelligence in Financial Services: A Qualitative Research to Discover Robo-Advisory Services.
10. Prasadula, D. (2023). The Startup Environment and Funding Activity in India.
11. Safdar, N. M., Banja, J. D., & Meltzer, C. C. (2020). Ethical Considerations in Artificial Intelligence.
12. Singh, S., Chauhan, A., & Dhir, S. (2020). Analyzing the Startup Ecosystem of India: A Twitter Analytics Perspective.
13. Winecoff, A. A., & Watkins, E. A. (2022). Artificial Concepts of Artificial Intelligence: Institutional Compliance and Resistance in AI Startups.

BIBLIOGRAPHY

BOOK

REFRENCES

1. "Artificial Intelligence: A New Synthesis" by Nils J. Nilsson
2. "The Ethics of Invention: Technology and the Human Future" by Sheila Jasanoff
3. "Artificial Intelligence: A Guide for Thinking Humans" by Melanie Mitchell

WEBSITE REFRENCES

1. https://en.wikipedia.org/wiki/Artificial_intelligence
2. https://en.wikipedia.org/wiki/Business_ethics
3. https://entrepreneurship.babson.edu/age-of-ai-for-entrepreneurs/