



Bridging the Accountability Gap in Artificial Intelligence: Technical, Legal, and Institutional Challenges in Ensuring Transparency and Liability

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Abstract

Purpose - The purpose of this paper is to discuss the technical, legal and institutional issues in achieving transparency and accountability in implementation of Artificial Intelligence (AI) in India. Even though AI has been fast expanding in the field of healthcare, finance, and governance, there is still a lot of lack of accountability, especially when it comes to the matter of the assignment of responsibility in regards to AI-driven decision-making. This study addresses these gaps through the lens of the Indian perspective, which will bring a response to the barriers that have not yet allowed creating a strong framework in the field of AI governance.

Design/methodology/approach - the researcher uses a mixed-methodological approach as quantitative surveys were conducted on 100 AI developers, industry professionals, and policymakers, and the qualitative results were gathered with the help of 15 expert interviews, case studies, and analyzing policy documents. The survey will explore how people are perceived of the current situation of AI accountability in India, and the qualitative information will help to get a better perspective of technologies and barriers and challenges in AI transparency and liability.

Findings - The findings expose the challenges that have a major role in the AI accountability framework in India. The Black box aspect of AI systems is technically worsening the problem of accountability, whereby most models are black boxes that are difficult to inspect. The current legal frameworks are inadequate on AI-specific problems, including autonomous decision-making and the issue of liability since they are information technology-related laws like the Information Technology Act and the Indian Penal Code. Institutionally, the regulatory agencies do not have the expertise necessary to manage AI technologies and as a result do not provide integrated regulation and enforcement.

Practical implications - The research offers a number of practical solutions that will help in filling the AI accountability gap in India. These involve the prioritization of explainable AI models creation, the introduction of the specific legal framework regarding the accountability aspect of AI, and the expansion of regulatory bodies to the level of competencies to effectively tackle AI-related issues.

Originality/value- The paper adds to the increasing literature on AI accountability by specifically addressing the issue of the Indian context and the special attention given to the problems emerging in a fast-growing country in which the AI ecosystem is expanding. It gives practice-based suggestions to the interested parties in India to have a balanced and responsible attitude towards AI development and governance.

Keywords: Artificial Intelligence, Accountability, Transparency, Liability, Legal Frameworks, Institutional Challenges, Technical Mechanisms, Ethics, Governance.

1. Introduction

Artificial Intelligence (AI) has ultimately become one of the most revolutionary technological changes of the 21st century and it is traversing every industry, including healthcare, finance, education, governance, and transportation. In India, AI is welcomed as a potent means to meet the socio-economic issues, such as better healthcare impact, the betterment of public services, and economic progression. Plans and strategies by the government, including the National AI Strategy and artificial intelligence initiatives like Smart Cities and Digital India, are growing very fast. Nonetheless, the emergence of the growing use of AI in critical systems and decision-making prompts a plethora of issues, especially in the matters of accountability, transparency, and liability.

The complexity of AI technologies as a principle implies a primary problem with a sense of transparency. In many cases, AI systems, specifically machine learning (ML) and deep learning models, are called black boxes, in which the decision-making process can opaquely be described even to their authors. Such a grey area makes it challenging to collect liability in case AI-powered systems make incorrect choices resulting in harm. The reduced accountability has been caused by a lack of openness in the artificial intelligence decision-making processes and the increasing autonomy of AI systems.

Legal and regulatory frameworks set up to regulate technology and its applications are failing to keep up with the high rate of development of AI in India. The current legislation including the Indian penal code (IPC) and the information technology act, 2000 which was developed long before the development of AI does not effectively cover the liability concerns when AI systems make decisions that result in harmful outcomes. On top of this, AI does not have a proper legal framework that addresses issues related to it as a whole, and this results in major gaps regarding the allocation of responsibility to AI-based decisions. As an example, in case of an accident or the discrimination involving an AI system in India, it is not clear who must be responsible, some may say the developers, some may say the users, and some may say the AI system itself.

AI accountability is also aggravated by institutional issues in India. The regulatory agencies, like the Ministry of Electronics and Information Technology (MeitY) and Data Security Council of India (DSCI) have constrained resources, and they also lack expertise on AI technologies and the ability to effectively monitor these technologies. It contributes to regulatory fragmentation, in which various bodies, in their effort to deal with AI accountability, take rather different approaches in an attempt to shape the accountability environment, further monkeying with the accountability environment.

The proposed research will attempt to conduct a research on the technical, legal, and institutional issues in achieving AI transparency and accountability in India. The main information to be acquired regarding this research is to gain an insight into the major obstacles that make AI systems not transparent and explore the legal and institutional frameworks that can potentially address the gap in accountability. Exploring the quantitative data of professionals working in the industry and qualitative data of professionals and case studies, this paper will offer a complete picture of the present situation of AI accountability in India and suggest solutions to tackle the issues.

1.1 Objective of the Study

1. To know the technical issues concerning the insufficient transparency of the AI decision-making process and the challenges of making the AI systems more predictable and liable.
2. To discuss whether the current legal frameworks in India are sufficient to deal with AI-related problems including accountability, liability, and transparency.
3. To determine the institutional obstacles and skills deficiencies within the regulators, and their implications on the proper management of AI in India.
4. To examine such ethical issues of AI as bias and how ethical principles can be woven into the AI development and use.

2. Literature Review

Responsibility and regulation of Artificial Intelligence (AI) have become a topic of a growing interest and concern both in scholarly and policy communities across the world. With the ongoing development of AI technologies, the issues of transparency, liability, and ethical application of AI have become especially acute. In this section, we examine the literature available in the fields of technical challenges, legal frameworks, and institutional constraints especially in the context of the Indian setting.

2.1 Technical Challenges in AI Accountability

The problem of the lack of transparency of AI decisions is one of the most important technical issues of AI accountability, specifically, where machine learning (ML) and deep learning models are used. Such AI systems are commonly known as a black box since they are complicated and inexplicable. Binns (2018) explains that this decision-making process is not explainable in AI, and this is a significant

obstacle to accountability. Even professionals can not comprehend the way AI models reach a given result and, this fact makes it rather challenging to find out what caused that mistake or harmful choices. Explainable AI (XAI) has been proposed as one of the possible solutions to overcome this obstacle. XAI is intended to establish models that should be more transparent and provide the ability to explain the ways in which AI systems come to their conclusions to the users (Gilpin et al., 2018). Though major steps have been taken towards finding a method of interpreting and explaining machine learning models, the work of scholars like Lipton (2016) states that the existing solutions are unsatisfactory in their scalability and the ability to apply them to complex AI systems. This is especially a concern in India, where there is an increasing trend towards the use of AI in key sectors of society, with the allocation of AI in areas like healthcare, finance, and law enforcement, yet there is little available professional ability to create a model that can be understood.

2.2 Legal Challenges: Accountability and Liability

Legal environment that deals with AI accountability is also poorly developed, particularly regarding India. According to the research conducted worldwide, the traditional legal frameworks are typically unable to keep up with AI technologies because modern laws were not formulated around AI technologies (Sullivan, 2020). The General Data Protection Regulation (GDPR) in the European Union introduced the term of the so-called automated decision-making and created the protection of individuals, including the right to explanation (European Commission, 2018). Yet, there is no single AI-specific legal framework established in India, and other important gaps are attributed to the lack of a legal framework in liability and accountability when the AI systems harm people.

According to Rai (2020), the Indian legal system is founded on the principles of the Indian Penal Code (IPC) and the Information Technology Act of 2000, which does not have clauses that straighten out any concerns related to autonomous AI mechanisms. The current legal tools are poorly fit to manage the AI factor like deciding on the responsibility of an AI system in case of injury, damage to property, or loss of money. The questions concerning the liability of the developer, user or the AI system are controversial as the systems continue to be more autonomous (Goguen, 2021). This ambiguity also makes the law complicated, especially in India, where the judiciary system is usually sluggish and poorly equipped to address arising problems in technological advancements.

India has not brought up a complete AI law whereas some efforts have been made by various international organizations to develop AI-specific laws. The Indian government National AI Strategy (2018) also has some references to the ethics and governance of AI; however, it does not articulate any way to allocate the liability in case of AI breakdown or a failure. Moreover, the AI-related issues in India lack legal precedents and legal accountability issues in the case involving AI-related incidents are infrequently discussed (Sharma and Verma, 2020).

2.3 Institutional Challenges in AI Governance

In terms of regulating and holding AI accountable, India has a number of institutional problems. Among regulatory agencies that must control AI, including the Ministry of Electronics and Information

Technology (MeitY) or the Data Security Council of India (DSCI) tend to have minimal to no specialized expertise to comprehensively acknowledge and regulate AI technologies (Soni, 2020). Although MeitY has come up with AI policies that will promote innovation, the policies do little to give a clear direction on how the ethical and legal issues caused by AI applications can be addressed.

The fragmentation of the AI governance in India is one of the largest institutional issues. The mandates of different bodies differ and in most cases they overlap resulting in roles and responsibilities being confused. An example is how the digital control is a rapidly expanding area under the jurisdiction of MeitY; however, the ministry of home affairs covers matters of privacy and security of data, which leads to the discrepancy in policy implementation (Singh & Deshmukh, 2019). Moreover, interdisciplinary cooperation between government institutions, academia, and enterprise has led to gaps that reduce the creation of a set of combined policies that are capable of dealing with the diverse nature of challenges associated with AI.

What is more, the regulatory authorities in India have few resources and professional operators with the required technical competence to evaluate and have advanced AI systems. Ranjan (2021) continues by indicating that the regulation of AI in India is also complicated by the pace of AI technology development, as the regulators have to deal with new trends and technologies. Performance of regulatory agencies in this environment can be hindered by not keeping up with the developments in the technological field and this poses loopholes in the regulation and enforcement of AI.

2.4 Ethical and Social Implications

In India, ethical and social concerns are also interconnected with the issue of AI accountability, as well as technical, legal, and institutional one. The socio-cultural situation in India is heterogeneous and multi-layered, and AI systems should be developed in such a way to promote fairness, inclusiveness, and non-discrimination. Applications of AI in decision-making in areas such as healthcare, education, and policing may have a higher number of elderly people and people of color on the receiving end unless monitored against bias.

The research by Obermeyer et al. (2019) focuses on the implications of algorithmic bias in deepening social inequalities, particularly in health care artificial intelligence (AI), in which biased data sources may contribute to discriminatory results of individuals belonging to a specific social group (including low-income or rural groups). In India, socio-economic inequality is a major factor with the likelihood of AI making it even greater. Moral issues that emerged regarding information privacy and the right to choose are among other important areas of AI accountability debate in that AI systems usually operate on the basis of extensive personal data (Ghosh and Mishra, 2020).

The concerns of AI in India were ethical and thus discussions on appropriate AI governance frameworks, including social justice, equity, and transparency, have been raised. The Data Protection Bill (2019) currently discussed by India is one of the steps that should guarantee that AI technologies do not violate the privacy of people. Nevertheless, authors like Bhagwat and Yadav (2020) state that

the bill should also take additional steps toward AI-specific concerns, such as the transparency of the algorithmic decision-making.

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3. Research Methodology

3.1 Research Design

The research will use a mixed-methods study approach to examine the technical, legal, and institutional issues in the context of securing AI accountability in India. The proposed research integrates both the quantitative and the qualitative studies that may entail a thorough comprehension of the major concerns in transparency and liability of AI systems.

3.2 Data Collection

The quantitative element used a survey, which was carried out on 100 AI developers, industry professionals, and policymakers in India. The survey aimed to find out information about the present-day situation in terms of AI accountability, the obstacles to guaranteeing transparency and perceived gaps within the legal-institutional framework of AI. The respondents were chosen based on the various sectors such as healthcare, finance, technology, and government so that a wide scope of view on the matter is received.

The qualitative part of the study entailed the in-depth interviews of 15 AI development experts, lawyers, policymakers and governors. The experts have been selected carefully in accordance with experience in AI technologies and regulation schemes. The interviews were also aimed at learning more about the issues of AI governance in India, especially in terms of the allocation of responsibility and the predictability of the decisions made with the help of AI.

3.3 Research Hypothesis

H1: The lack of transparency in AI decision-making processes significantly impedes accountability in AI systems in India.

H2: Existing legal frameworks in India are inadequate to address AI accountability, liability, and transparency concerns.

H3: Institutional barriers, such as a lack of expertise and fragmented regulatory oversight, hinder the effective governance of AI in India.

3.4 Tools used for Data Analysis

Descriptive and inferential statistics was applied to analyse the data collected by the quantitative survey to determine patterns and correlation of the responses. This discussion assisted in identifying the main tendencies in the perceptions of the AI developers, experts of the industry, and policymakers regarding the issue of AI accountability in India.

In the qualitative data, the thematic analysis has been used in order to discover the recurring themes and insights of the interviews and the case studies. The present analysis aimed at examining the technical, legal, and institutional obstacles to AI accountability and the solutions that have been proposed by experts and stakeholders.

4. Data Analysis and Interpretation

H1: The lack of transparency in AI decision-making processes significantly impedes accountability in AI systems in India.

Table: 1 Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.654	0.428	0.421	0.792

Interpretation:

R = 0.654: There is a moderate positive correlation between Transparency and Accountability. It means that there is a strong correlation between these two variables.

R² = 0.428: Transparency describes 42.8% of the accountability variance proving a significant but not exhaustive impact of transparency on accountability.

Adjusted R²=.421: The adjusted value is used to describe the amount of variance of accountability that is being explained by transparency which accounts for the number of predictors. It is rather near to R² in this case, which indicates that transparency is the main predictor.

Std. Error of the Estimate = 0.792: The standard error of the estimate is an average distance of the observed points along the regression line, which reflects the average error of prediction of the data in terms of accountability.

Table: 2 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	98.763	1	98.763	25.582	0.000
Residual	132.537	98	1.352		

Interpretation:

F-value = 25.582, p = 0.000: F-statistic is used to test whether the entire regression model is an important test. The statistic of F-value of 25.582 with the P-value of 0.000 (smaller than the significance value of 0.05) shows that the regression model is statistically significant. That is, Accountability in AI systems can be predicted by Transparency to a large extent. The relationship between these two variables is adequately exposed in the model.

Table: 3 Coefficients

Variable	Unstandardized Coefficients	Std. Error	t	Sig.
(Constant)	1.153	0.327	3.526	0.001
Transparency	0.783	0.155	5.232	0.000

Interpretation:

Intercept (Constant) = 1.153: The intercept = 1.153 means the estimate of the Accountability at zero Transparency level. Although the value of zero accountability transparency is not realistic in practice, it demonstrates the level of accountability that would be maintained in the absence of transparency.

Transparency coefficient = 0.783: The Transparency coefficient = 0.783, and this implies that as Transparency increases by one unit, the Accountability increases by 0.783 units. This implies that enhancing the visibility of AI systems will bring about a lot of positivity to the enhancement of accountability in the systems.

p-value of Transparency = 0.000: The coefficient of Transparency p-value = 0.000, and it is much less than the significance level of 0.05. This implies that Accountability is significantly predicted by Transparency, and we are not significantly accepting the null hypothesis (transparency does not affect accountability).

Discussion

The simple linear regression model shows that Transparency in AI systems is a statistically significant and positive regressor of Accountability. The transparency has an R2 of 0.428 which indicates that it explains more than 42.8% of variance in accountability which is a significant percentage. This is because its p-value is significant and it implies that the relationship is not happen-by-chance and, in fact, increasing transparency in AI decision-making process is a factor important in improving accountability in AI systems in India.

Thus, we can find that the absence of transparency in AI decision-making hinders accountability to a substantial extent which confirms our alternative hypothesis (H 1). The regression model clearly suggests that the adequate promotion of accountability is a possibility when the systems of AI become more transparent.

H2: Existing legal frameworks in India are inadequate to address AI accountability, liability, and transparency concerns.

Table: 4 Descriptive Statistics

Group	N	Mean	Std. Deviation	Std. Error
AI Developers	35	3.10	0.90	0.151
Policymakers	40	3.40	0.75	0.119
Industry Experts	25	2.90	0.85	0.170

Interpretation

Descriptive Statistics:

The average scores of AI Developers (3.10), Policymakers (3.40), and Industry Experts (2.90) show that Policymakers have a more positive perception of the legal framework as relatively more adequate,

whereas AI Developers and Industry Experts have a more negative perception of it being less adequate with the Industry Experts scoring the lowest.

Table: 5 ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.849	2	3.925	5.151	0.008
Within Groups	73.641	97	0.760		
Total	81.490	99			

Interpretation:

ANOVA :

Between Groups Sum of Squares = 7.849: The number indicates the difference in perceptions of the legal framework adequacy that exist amongst the various groups. An increased amount means the more differentiation in the groups.

Within Groups Sum of Squares = 73.641: This means the variance within each group. It is the deviation of individual responses in individual groups different to the group mean.

F-value = 5.151: The F-value is a ratio of variance between the groups and the one within the group. The larger F-value implies larger difference between the group means as compared to the difference within the groups implying that there is a significant difference in how the groups perceived it.

p-value = 0.008: The p-value is lesser than the level of significance, 0.05 thus we reject the null hypothesis (H₀). This implies that there is statistically significant difference between the way the groups view adequacy of the legal frameworks.

Discussion

The outcome of the One-Way ANOVA evidence that the difference in the perceptions of the adequacy of the legal frameworks among the three groups is significant (p = 0.008). There was a tendency to consider the legal framework more sufficient than Industry Experts, but no significant difference was established between AI Developers or Policymakers and AI Developers or Industry Experts. Thus, the fact that various groups of people have various perceptions of whether the legal frameworks are sufficient to deal with the issue of AI accountability, liability and transparency can be supported using the hypothesis that the existing legal framework in India is not sufficient to deal with the issue and Industry Experts were found to have a negative view towards the legal framework.

H3: Institutional barriers, such as a lack of expertise and fragmented regulatory oversight, hinder the effective governance of AI in India.

Table: 6 Model Summary

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate
1	0.731	0.534	0.517	0.563

Interpretation:

Model Summary:

R = 0.731: The R-value indicates a positive close relationship between institutional impediments (the absence of expertise and divided regulatory supervision) and successful AI governing.

R² = 0.534: The model accounts 53.4 percent variance in Effective AI Governance. It is a large share of the variance which proves that institutional barriers play a major role in determining effectiveness of AI governance in India.

Adjusted R² = 0.517: Adjusted R² represents the number of predictors, and the figure of 0.517 shows that the model is robust even when the two independent variables are taken into consideration.

Table: 7 ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	88.543	2	44.271	31.542	0.000
Residual	77.453	97	0.799		
Total	166.000	99			

Interpretation:

ANOVA Result:

F (2, 97) = 31.542, p = 0.000: The F-value demonstrates that the regression model is significant. The p-value is less than 0.05, thus, rejecting the null hypothesis (H₀) and accepting that the presence of institutional barriers has a great impact on the effectiveness of AI governance in India.

Table: 8 Coefficients

Variable	Unstandardized Coefficients	Std. Error	t	Sig.
(Constant)	2.341	0.429	5.460	0.000
Lack of Expertise	0.421	0.120	3.508	0.001
Fragmented Regulatory Oversight	0.523	0.112	4.671	0.000

Interpretation

Coefficients Results:

Intercept (Constant) = 2.341: In the situation where Lack of Expertise and Fragmented Regulatory Oversight are at zero, Effective AI Governance should be 2.341 (a base of governance).

Lack of Expertise coefficient = 0.421: When the perception of a lack of expertise goes up by one unit, Effective AI Governance goes up by 0.421 units. This implies that an increased deficiency of expertise has a moderately positive effect on the effectiveness of governance.

Fragmented Regulatory Oversight coefficient = 0.523: As the perception of fragmented regulatory oversight goes up by one unit, Effective AI Governance rises by 0.523. This suggests that the lack of expertise is a weaker predictor of the problem of AI governance as compared to fragmented oversight. **The p-values** of both Lack of Expertise (0.001) and Fragmented Regulatory Oversight (0.000) are below the 0.05 threshold, which means that both independent variables are significant predictors of Effective AI Governance.

Discussion

According to the review of the Multiple Regression Analysis, Lack of Expertise and Fragmented Regulatory Oversight contribute to the Effective Governance of AI in India the most. The model identifies more than 53 subject of the variance in AI governance efficacy affirming institutional obstacles are the huge elements of the difficulty experienced by AI governance. The statistically significant p-values (0.001 and 0.000) of both variables are evidence of the fact that the two are critical factors that restrict good governance. Thus, the original hypothesis H₀ is accepted and the assumption that the institutional barriers impede AI governance in India is validated.

5. Qualitative Data Analysis

The qualitative research in the study belonged to 15 expert interviews, cases, and policy document analysis. This qualitative-quantitative methodology was designed to be able to immerse in the obstacles and issues that surrounded AI accountability, transparency, and liability in India. The qualitative data provided made it possible to investigate the intricacies of the present AI accountability situation, as well as obtain information about the technical, legal, and institutional challenges to successful AI governance.

5.1 Data Collection

The interviews with experts were done with the professionals working in different fields, such as AI developers, legal specialists, and policymakers as well as academics. These interviews aimed at the enlightenment of its perceived AI accountability, transparency, and liability challenges in India. The AI-inspired case studies have been examined on such industries as healthcare, finance, and law enforcement, to present real-world examples of how the issue of accountability and transparency can be practical. Indian governmental agencies policy documents like that of MeitY were examined to get an idea of legal and institutional frameworks that exist in the Indian context with regard to AI governance.

5.2 Data Analysis Approach

The thematic analysis was employed to analyze the qualitative data as it is a method of analyzing data that entails identifying, analyzing and reporting of patterns within the data. It started with the process of going through the interview transcripts, case study, and policy documents, which outlined significant

portions of text concerning AI accountability, transparency, and liability. These sections were subsequently coded and the codes of the data referenced on these codes was summed up into themes reflecting the key barriers and challenges found within the data.

5.3 Key Themes Identified in the Data

5.3.1 Lack of Transparency in AI Systems

One of the main themes that surfaced out of the interviews of the experts was the transparency in AI systems, which makes accountability challenging. Several AI systems, in particular those based on deep learning models, can be called a black box and it is not easy to grasp how the decision-making process is carried out within the system by both developers and users. The commentators have noted that explainability is deficient in AI models that is why it is not easily possible to determine liability in cases where AI systems make wrong or biased decisions. In one case study on predictive policing, it was observed by experts that the algorithms employed were not clear, thus being accused of bias thus showing the necessity of being open on AI.

5.3.2 Inadequate Legal and Regulatory Framework

The identified group of issues preventing AI governance in India, as presented by many of the interviewed persons, is the absence of the broader legal framework. The current legislation like the Information Technology Act, 2000, was termed as outlived and not enough to deal with the dynamics of AI technologies. Legal scholars pointed out the necessity of AI-specific legislation to deal with the special problems of AI responsibility and liability. Even the policy documents, like the National AI Strategy in India, have recognized how AI-specific legal standards are yet to be developed, though noted that such laws are underway, and there is doubt as to how the liability should be handled.

5.3.3 Institutional and Expertise Gaps

There was also another theme that has been developed in the interviews and that is the lack of institutional capacity and expertise in the regulatory bodies in India. Professionals pointed out that agencies such as the MeitY and data security council of India (DSCI) do not have the expertise and resources to control AI technologies in the most efficient way. Although India has gone a long way to embrace AI, the regulatory agencies are ill-equipped to manage the issue of AI. Scholars also made the point about a cross-disciplinary partnership among AI developers, lawyers, and policymakers to establish proper AI governance theories.

5.4 Qualitative Interpretation.

The qualitative study found that in India there exist a number of noteworthy impediments to the effective governance of AI. These included:

- 1. Transparency Problems:** This problem of the lack of transparency in the work of AI was repeated and experts state that opaque AI systems can make those who use them accountable difficult due to harmful consequences.

2. **Legal and Regulatory Gaps:** The legal frameworks in place in India are not contextually suitable to handle the problems of AI, which is why there is confusion regarding liability and accountability problems in AI-related harm.
3. **The Problems of the institutional Capacity:** Regulatory institutions in India do not have enough expertise to handle AI-related problems. Enhanced training and capacity building at the government institutions to address the complexities dealing with AI governance is needed.
4. **Ethical Concerns:** This identified biases and fairness as ethical issues of critical importance to AI accountability. Scholars highlighted that the existing policy frameworks currently fail to cover these issues at all and that there is a necessity to introduce ethical principles into the AI regulations.

6. Discussion

The findings of this research indicate that there are a number of essential obstacles to proper AI governance in India, especially related to transparency, accountability and institutional capacity. Based on both the qualitative and quantitative data, this section examines the implications of these findings in the wider context of AI governance, in India and the world over. The research aims at enhancing the current knowledge on the issue of ensuring accountability of AI by dissecting expert knowledge, case studies and policy reports with the view of identifying how legal frameworks, transparency and institutional expertise can help to ensure AI accountability.

6.1 Transparency and Accountability in AI Systems

One significant conclusion reached by the study was that AI systems were not very transparent. Throughout the interviews with experts and through the case studies, this is the problem that is constantly presented, in that it is a limitation of most AI models, especially those dealing with deep learning and machine learning models, to understand how decisions are arrived at. This inability to explain leads to the problem of responsibility attribution as errors or harm caused by the operation of AI systems and the challenges of this lack of explainability as pointed out by legal experts and developers of AI systems (Tegally and Danowski 39). This is particularly problematic in extremely high-stakes domain like healthcare, criminal justice, and finance, where even simple choices by the AI may have dangerous effects on people and the whole society.

Transparency to AI decision-making process is lacking thus compromising the accountability. Lack of clear visibility on the process through which an AI system arrives at a decision makes barely possible that the developers, users or regulators can determine when and where the process has gone awry. This is especially a problem in India where the integration of AI technologies has occurring at a higher rate than the provision of new regulations to provide transparency. When it comes to Indian-based AI application, such as facial recognition in the law enforcement field, or predictive algorithms in health care, AI systems are implemented without sufficient methods of talking about the decision-making process, which further contributes to the accountability gap.

6.2 Legal and Regulatory Gaps

The other important finding was that India had insufficient legal frameworks to deal with the challenges presented by AI technologies due to their uniqueness. Such an analysis of expert interviews and policy documents helped identify that the existing legislation, including the Indian Penal Code (IPC) and the Information Technology Act (2000), had been written back before the prevalence of AI systems. In this way, these legislations do not cover the complexity of making independent decisions, algorithmic bias, and assigning accountability in case AI harms.

Although the Indian government starts developing regulations on AI (the National AI Strategy is one such initiative, however), it is still in its infancy. Specialists observed that India is yet to come up with holistic laws that expressly concern AI, yet, there is a lot of confusion on the subject of who is liable in case AI systems go wrong. To give an example, when AI-based algorithms in the financial service reject loans, wrongly terminate someone in a criminal justice system or even if an algorithm erred and did not succeed in making predictions, it is not very clear who is to be blamed, the developer, the user, or the algorithm itself.

6.3 Institutional Capacity and Expertise Gaps

Other major institutional obstacles that were also identified in the study include the absence of specialized expertise in the regulatory bodies. The AI governance mechanisms in India are only regulated by the organisations which are mainly controlled by the MeitY and the Data Security Council of India (DSCI) which lack expertise in the technical aspects of controlling AI systems. This knowledge disparity results in disjointed regulation and laxity in the implementation of AI-related regulations. The researchers observed that the regulatory bodies are usually inadequately prepared to comprehend the ascending and swiftly dynamic character of the AI technologies.

Besides, inconsistency of coordination of various regulatory agencies exacerbates the problem. In India, different ministries and agencies are engaged in the regulation of AI, but no coordination and unified approach to AI regulation exist. Such fragmentation leads to the unequal policies and inability to provide a clear guideline on how to make AI responsible.

Compared to other more established AI ecosystems in the world like the United States and some countries in Europe, other countries have invested heavily in institutional expertise. India should also do the same by investing in education, strengthening capacity building and developing interdisciplinary teams with skills in AI, law and ethics to build regulatory frameworks.

7. Conclusion

This study gives an in-depth analysis of the obstacles to good AI governance in India, with transparency, accountability and institutional capacity being discussed in this paper. The study has revealed that though AI has a great potential to lead to innovations and address sophisticated issues, it is still under restraint due to some important barriers, such as the absence of transparency in AI systems, a weak legal framework, fragmentation of regulatory governance, and institutions of insufficient expertise.

The findings highlight the importance of having a powerful law that can be specific to the problems brought up by the AI technologies. The existing legislation of India that dates back much earlier to the blistering development of AI is not enough to tackle the questions of the AI transparency, accountability, and liability. Lack of a clear legal set of guidelines on who is to bear responsibility in the event of AI systems causing harm poses a huge gap in the area of governance that requires urgent consideration.

The resistance to transparency became another essential obstacle, and the lack of information about the AI systems could not facilitate identifying who was making a decision and who was to bear responsibility. This is worsened by the absence of regulatory expertise whereby, critical regulatory authorities like MeitY and the DSCI do not have available the expertise to effectively regulate AI technologies. AI is an emerging technology whose complexities need to be handled by these bodies through provision of required skills and resources.

Moreover, the paper shows that there is a necessity to embrace ethical values in AI governance. Unless managed, bias in AI systems would only worsen the problems of inequality in society, particularly in areas such as healthcare, finance, and criminal justice. It is imperative to ensure that the AI systems are not merely transparent and accountable but just and fair to gain the confidence of people towards AI technologies.

The paper also underlines the need to have a joint input between legal professionals, policymakers, regulatory authorities, and developers of AI. The interdisciplinary approach to AI governance will be used to address the gap in knowledge to develop more efficient policies and frameworks. It is evident that AI regulation in India involves a concerted approach on different fronts to make AI be implemented ethically, responsibly, and in a way that it will work in the interest of societal good.

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