

Artificial Intelligence and Fiscal Deficit Management in India: Opportunities, Risks and a Policy Framework

Shraddha Singh Patel (Corresponding Author)

University of Lucknow, Lucknow, India

Email: singhshraddha790@gmail.com

Prof. Shabi Raza

Shia PG College, Lucknow, India

Abstract

Fiscal deficit management is increasingly dependent on the government's ability to generate reliable information, improve revenue collection, control public expenditure and anticipate fiscal risks. At the same time, the rapid development of Artificial Intelligence (AI) is changing the way governments process large administrative and financial datasets. This paper examines how AI can contribute to fiscal deficit management in India through improvements in revenue administration, expenditure monitoring, public procurement, subsidy management, fiscal forecasting and fiscal-risk assessment. The paper adopts a conceptual and policy-oriented approach and develops an integrated framework connecting AI adoption with fiscal management capacity.

The central argument is that AI should not be viewed as an automatic mechanism for reducing the fiscal deficit. Rather, its potential lies in improving the quality, speed and accuracy of fiscal information and administrative decisions. Better information can strengthen tax compliance, identify irregular expenditure, improve forecasting and support more effective allocation of public resources. These improvements may indirectly contribute to fiscal sustainability. However, the benefits of AI depend on data quality, institutional capacity, transparency, cybersecurity, privacy protection and human oversight. The paper therefore proposes a six-pillar framework comprising AI-enabled revenue intelligence, expenditure monitoring, fiscal forecasting, fiscal-risk management, public procurement and responsible AI governance. A conceptual Artificial Intelligence Fiscal Management Index (AIFMI) is also proposed for future empirical research. The paper concludes that AI should be incorporated into India's fiscal architecture as a decision-support technology within a transparent and accountable institutional framework rather than as a substitute for fiscal policy judgement.

Keywords: Artificial Intelligence, Fiscal Deficit, Public Financial Management, Tax Administration, Fiscal Policy, Revenue Mobilisation, India, Fiscal Sustainability

1. Introduction

Fiscal deficit represents one of the most important indicators of the financial position of a government. Persistent deficits can increase public borrowing requirements and affect debt dynamics, while an excessively rapid reduction in expenditure can constrain investment and economic activity. Effective fiscal management therefore requires a balance between revenue mobilisation, expenditure efficiency, public investment and debt sustainability.

The nature of fiscal management is changing because governments now generate and process unprecedented quantities of digital information. Tax records, electronic transactions, procurement information, expenditure accounts, subsidy databases and other administrative records can potentially be analysed using advanced computational techniques. Artificial Intelligence provides tools through which large and complex datasets can be examined more rapidly than conventional manual systems.

The relevance of AI to public finance is not limited to automation. Its more important contribution may come from its ability to identify patterns that are difficult to detect through conventional administrative procedures.

In tax administration, AI-based systems can assist in identifying potentially non-compliant cases and prioritising administrative resources. In public financial management, AI can support forecasting, monitoring and anomaly detection. OECD research identifies tax administration and public financial management among the government functions in which AI applications are already being developed and deployed.

India provides a particularly relevant setting for examining this relationship. The country has experienced rapid expansion of digital public infrastructure and has simultaneously established the IndiaAI Mission. The Government approved the IndiaAI Mission in March 2024 with an outlay of approximately ₹10,372 crore over five years, with components covering computing infrastructure, datasets, applications, skills, start-up financing and safe and trusted AI.

Despite these developments, limited academic attention has been devoted to the specific relationship between AI adoption and fiscal deficit management in India. Existing discussions often examine AI from the perspectives of productivity, employment, public services or digital governance. The fiscal implications of AI adoption require a more integrated examination covering both the revenue and expenditure sides of government finance.

This paper addresses this gap by developing a conceptual framework through which AI can influence fiscal management. It does not claim that AI automatically reduces the fiscal deficit. Instead, it proposes that AI may strengthen the administrative foundations through which fiscal decisions are made.

2. India's Fiscal Management in the Digital Era

Fiscal deficit arises when government expenditure exceeds government receipts excluding borrowings. Managing this gap involves decisions regarding taxation, public expenditure, borrowing, investment and debt servicing.

The quality of fiscal management depends not only on the size of the deficit but also on the accuracy and timeliness of information available to policymakers. Delayed information can weaken expenditure control, while inaccurate revenue forecasts can create unexpected financing requirements.

Digitalisation has already changed several aspects of public administration. The increasing availability of electronic tax records, transaction-level information and integrated financial systems creates a larger information base for fiscal authorities. AI can potentially operate on this information base to generate predictive and analytical outputs.

However, the transition from digital administration to AI-enabled administration should not be treated as automatic. AI systems depend on reliable data and suitable institutional arrangements. OECD research notes that public financial management applications of AI generally build on earlier technologies such as financial management information systems, data analytics and robotic process automation.

Therefore, AI should be understood as the next stage of an existing process of administrative digitalisation rather than as a complete replacement of traditional fiscal institutions.

3. Conceptual Relationship Between AI and Fiscal Deficit

The proposed relationship can be expressed as:

AI Adoption → Better Fiscal Information → Better Administrative Decisions → Greater Fiscal Efficiency → Improved Fiscal Management

The relationship operates through several channels.

First, AI can improve revenue administration by identifying unusual transaction patterns and potential compliance risks.

Second, it can strengthen expenditure management by detecting abnormal spending patterns and possible duplication.

Third, AI can improve fiscal forecasting by analysing large numbers of economic and administrative variables.

Fourth, AI can assist public procurement by identifying unusual bidding patterns and price anomalies.

Fifth, AI can support fiscal-risk management by monitoring changes in revenue, expenditure, debt and contingent liabilities.

These channels do not imply that greater AI adoption will mechanically produce a lower fiscal deficit. The final fiscal outcome depends on how information generated by AI is incorporated into government decisions.

4. AI and Revenue Mobilisation

Revenue mobilisation is one of the most direct channels through which AI can influence fiscal management.

4.1 AI-Based Tax Compliance

Tax authorities deal with very large datasets involving taxpayers, transactions, returns, payments and other financial information. Traditional approaches may find it difficult to examine all available information simultaneously.

AI-based analytical systems can identify unusual patterns and classify cases according to potential compliance risk. Such systems may help authorities direct limited investigative resources towards cases requiring greater scrutiny.

The OECD reports that AI applications in tax administration are being used particularly for detecting tax evasion and fraud, assisting decision-making and improving taxpayer services.

For India, greater analytical capacity could potentially improve the efficiency of tax administration. However, automated risk classification should not itself determine adverse action against taxpayers. Human verification and procedural safeguards remain necessary.

4.2 AI and GST Administration

The Goods and Services Tax system generates large quantities of digital transaction information. AI can potentially be used to examine transaction networks, identify unusual reporting behaviour and detect patterns that may require further investigation.

The fiscal relevance of such applications arises from the possibility of improving compliance rather than increasing statutory tax rates. If administrative efficiency improves, the government may be able to strengthen revenue collection without relying exclusively on additional taxation.

4.3 Direct Tax Administration

AI can also assist direct-tax administration through risk profiling, information matching and identification of inconsistencies between different sources of financial information.

The important policy principle is that AI-generated indicators should be treated as **decision-support signals rather than final determinations**.

5. AI and Government Expenditure Management

Revenue mobilisation alone cannot ensure fiscal sustainability. Efficient management of public expenditure is equally important.

5.1 Expenditure Anomaly Detection

AI can examine government expenditure records to identify unusual patterns. Examples may include:

- unexpected changes in spending patterns;
- repeated payments with similar characteristics;
- unusual timing of expenditure;
- deviations from historical spending behaviour; and
- potential duplication across administrative records.

Such systems could help financial authorities identify areas requiring human review.

5.2 Public Procurement

Public procurement represents a major component of government expenditure. AI-based analytical systems can potentially compare bids, prices, supplier histories and procurement patterns.

The objective should not be to allow an algorithm to decide which supplier receives a contract. Instead, AI can help identify transactions that warrant additional scrutiny by procurement officials and auditors.

This distinction is important because public procurement involves legal, technical and contextual considerations that may not be captured completely by automated models.

6. AI and Subsidy Management

Subsidies can pursue important social and economic objectives, but poorly targeted programmes may increase fiscal pressure.

AI can potentially assist governments in identifying:

1. duplicate beneficiaries;
2. outdated beneficiary records;
3. unusual payment patterns;
4. changes in eligibility-related information; and
5. gaps between programme objectives and actual utilisation.

The use of AI in subsidy administration should nevertheless be accompanied by accessible grievance mechanisms. An incorrect algorithmic classification should not automatically result in the withdrawal of a legitimate benefit.

7. AI and Fiscal Forecasting

Fiscal planning requires forecasts of revenue, expenditure, economic growth, inflation and borrowing requirements.

Traditional forecasting models remain important, but AI and machine-learning methods can provide additional analytical tools. They can process nonlinear relationships and large numbers of variables that may be difficult to incorporate into simpler forecasting systems.

AI can therefore be used for:

- revenue forecasting;
- expenditure forecasting;
- tax collection nowcasting;
- debt-service projections;
- macro-fiscal scenario analysis; and
- early identification of deviations from budget assumptions.

OECD research identifies forecasting as one of the emerging applications of AI in public financial management.

However, fiscal forecasts should not become dependent on a single algorithm. Alternative models, scenario analysis and expert judgement should remain part of the forecasting process.

8. AI and Fiscal Risk Management

Fiscal risk extends beyond the headline fiscal deficit. Governments may face risks arising from public enterprises, guarantees, financial-sector developments, natural disasters, changes in interest rates and unexpected revenue shocks.

AI-based systems could create an integrated fiscal-risk dashboard that continuously monitors relevant indicators.

A conceptual system could classify fiscal risks into:

Revenue risks → Expenditure risks → Debt risks → Contingent liabilities → Macroeconomic risks

Early identification of these risks could allow policymakers to undertake preventive action rather than responding only after fiscal stress becomes visible.

9. AI and Public Debt Management

Debt management requires decisions regarding borrowing requirements, maturity structures, refinancing risks and interest costs.

AI can potentially support debt-management institutions through scenario analysis and forecasting. For example, models could simulate how changes in interest rates, growth or revenue collection may influence future debt-service requirements.

Nevertheless, borrowing decisions involve policy objectives and market conditions that cannot be delegated completely to automated systems. AI should therefore remain an analytical support mechanism.

10. Literature Review

The emerging literature on AI and government suggests that AI is increasingly being considered as an administrative technology rather than merely a private-sector innovation.

OECD's recent work provides a broad framework for understanding AI applications across tax administration, public financial management, procurement and other government functions. It emphasises that AI can improve administrative productivity and analytical capacity while simultaneously creating risks relating to data, transparency, accountability and institutional preparedness.

The literature on tax administration particularly highlights the use of data-driven technologies for compliance management and fraud detection. AI can help tax authorities process large volumes of information and allocate investigative resources more selectively.

Research on public financial management suggests that AI is developing from earlier digital technologies rather than appearing independently. Financial management information systems, analytics and automation have created the technological foundations for more advanced AI applications.

International policy discussions also emphasise that AI can generate economic and administrative gains but that these benefits are not automatic. Institutional quality, skills, governance arrangements and data availability influence the effectiveness of AI deployment.

For India, the policy environment has become increasingly relevant following the launch of the IndiaAI Mission. The Mission seeks to expand computing access, improve datasets, support AI applications and promote safe and trusted AI.

Research Gap

Three gaps emerge from the existing literature.

First, much of the literature examines AI and public administration generally rather than specifically connecting AI adoption with fiscal deficit management.

Second, studies often examine either revenue administration or expenditure administration separately. A fiscal-deficit perspective requires consideration of both sides simultaneously.

Third, there is limited development of an India-specific conceptual framework through which AI adoption can be measured against different components of fiscal management.

This paper addresses these gaps by proposing an integrated AI Fiscal Management framework.

11. Objectives of the Study

The study has five objectives:

1. To examine the potential role of AI in fiscal deficit management in India.
2. To identify the channels through which AI can influence government revenue and expenditure.
3. To examine the role of AI in fiscal forecasting and fiscal-risk management.
4. To identify institutional and governance challenges associated with AI-based fiscal administration.
5. To develop a conceptual framework for measuring AI adoption in fiscal management.

12. Research Questions

The paper addresses the following questions:

RQ1: Through which channels can AI influence fiscal deficit management?

RQ2: Can AI improve revenue mobilisation and expenditure efficiency?

RQ3: How can AI strengthen fiscal forecasting and fiscal-risk monitoring?

RQ4: What institutional risks may arise from AI-based fiscal administration?

RQ5: How can India develop an accountable framework for AI-enabled fiscal management?

13. Proposed Artificial Intelligence Fiscal Management Index

To facilitate future empirical research, this paper proposes an **Artificial Intelligence Fiscal Management Index (AIFMI)**.

The index can be represented as:

$$\text{AIFMI} = w_1R + w_2E + w_3F + w_4P + w_5D$$

where:

- **R** = AI adoption in revenue administration;
- **E** = AI adoption in expenditure monitoring;
- **F** = AI use in fiscal forecasting;
- **P** = AI use in public procurement; and
- **D** = AI-enabled debt and fiscal-risk management.

The weights can be determined in future research through expert-based methods, Principal Component Analysis, or another statistically justified weighting procedure.

The index is proposed as a research framework and **has not been estimated in this conceptual paper**.

14. Proposed Analytical Framework

Future empirical research can investigate whether improvements in AI-enabled fiscal management are associated with changes in the fiscal deficit.

A basic specification may be written as:

$$\text{FD}_t = \alpha + \beta_1\text{AIFMI}_t + \beta_2\text{GDP}_t + \beta_3\text{REV}_t + \beta_4\text{CAPEX}_t + \beta_5\text{DEBT}_t + \varepsilon_t$$

where:

- **FD** = fiscal deficit;
- **AIFMI** = Artificial Intelligence Fiscal Management Index;
- **GDP** = economic activity;
- **REV** = government revenue;
- **CAPEX** = capital expenditure;
- **DEBT** = public debt; and
- ε = error term.

Depending on the properties of the data, future research may employ ARDL, NARDL, VAR or other suitable econometric approaches.

No coefficient or statistical result is reported here because such estimates require actual data and formal econometric testing.

15. Risks Associated with AI-Based Fiscal Management

AI can improve fiscal administration, but it can also introduce new risks.

15.1 Data Quality

Poor-quality administrative data can generate unreliable predictions. AI cannot compensate completely for inaccurate or incomplete source information.

15.2 Algorithmic Bias

If historical administrative data contain systematic biases, AI models may reproduce or amplify those patterns.

15.3 Privacy

Tax and financial databases contain highly sensitive information. Data protection must therefore be an integral part of AI deployment.

15.4 Cybersecurity

Greater dependence on interconnected digital systems can create additional cybersecurity vulnerabilities.

15.5 Explainability

Individuals and businesses affected by government decisions should have access to meaningful explanations, particularly where automated systems influence administrative scrutiny.

15.6 Institutional Capacity

Successful implementation requires officials who understand both fiscal administration and AI technologies.

OECD research similarly identifies data, legacy infrastructure, skills, monitoring and governance as important challenges for AI adoption in government.

16. Responsible AI Governance in India

The fiscal application of AI should be aligned with India's broader approach to responsible AI.

The IndiaAI Mission includes a Safe and Trusted AI pillar focused on responsible development and deployment. India's current AI governance approach also places emphasis on transparency, fairness, accountability and risk management.

For fiscal administration, responsible AI should include:

- human oversight;
- transparent model documentation;
- regular algorithmic audits;
- data protection;
- cybersecurity standards;
- grievance redressal;
- independent review of high-impact decisions; and
- periodic evaluation of model performance.

The fundamental principle should be:

AI may recommend, detect and predict; accountable public authorities should retain responsibility for decisions.

17. A Six-Pillar Policy Framework

This paper proposes six interconnected pillars.

Pillar 1: AI-Based Revenue Intelligence

Develop AI systems for compliance analysis, fraud-risk identification and revenue forecasting.

Pillar 2: Intelligent Expenditure Monitoring

Use AI to identify unusual expenditure patterns and strengthen financial monitoring.

Pillar 3: AI-Supported Fiscal Forecasting

Integrate machine-learning tools with conventional macroeconomic and fiscal forecasting models.

Pillar 4: AI-Based Fiscal Risk Dashboard

Create an integrated monitoring mechanism covering revenue, expenditure, debt and contingent liabilities.

Pillar 5: AI-Enabled Public Procurement

Use AI as an analytical tool for identifying procurement anomalies and supporting audit selection.

Pillar 6: Responsible AI Governance

Establish clear standards concerning transparency, privacy, cybersecurity, human oversight and accountability.

18. Implementation Roadmap

Phase I: Institutional Preparation

The government should identify suitable fiscal functions for pilot AI applications and establish common standards for data quality and security.

Phase II: Pilot Applications

Pilot projects can initially focus on relatively well-defined areas such as tax-risk identification, expenditure anomaly detection and revenue forecasting.

Phase III: Evaluation

Each application should be evaluated against measurable indicators including accuracy, administrative savings, compliance outcomes and error rates.

Phase IV: Scaling

Successful applications can subsequently be integrated into broader fiscal-management systems.

Phase V: Continuous Audit

AI systems should be periodically reviewed because data patterns, regulations and economic conditions change over time.

19. Policy Matrix

Fiscal Area	Potential AI Application	Expected Administrative Benefit	Main Risk
Taxation	Risk identification	Better targeting of compliance resources	Algorithmic bias
GST	Transaction-pattern analysis	Detection of unusual activity	False positives
Expenditure	Anomaly detection	Improved expenditure monitoring	Data-quality problems
Procurement	Bid and price analysis	Stronger audit selection	Misinterpretation
Subsidies	Beneficiary analytics	Reduction of duplication/errors	Exclusion errors
Forecasting	Predictive models	Faster fiscal estimates	Model uncertainty
Debt	Scenario analysis	Better risk assessment	Overreliance on models
Fiscal governance	Integrated dashboard	Early warning capability	Cybersecurity

20. Discussion

The relationship between AI and fiscal deficit management should be interpreted through the concept of **administrative efficiency**.

AI does not generate fiscal resources by itself. Its potential contribution comes from improving how existing information and resources are managed.

For example, if AI helps identify previously undetected tax-compliance risks, additional revenue may be collected without changing tax rates. Similarly, if expenditure monitoring identifies duplication or unusual transactions, government resources may be used more efficiently.

The same logic applies to forecasting. Better forecasts do not automatically reduce the deficit, but they may allow policymakers to identify deviations from fiscal plans earlier.

Therefore, the expected relationship can be represented as:

AI capability → Administrative efficiency → Better fiscal information → Improved fiscal decisions → Potential improvement in fiscal outcomes

The final effect will depend on institutional implementation.

21. Implications for India's Fiscal Policy

The integration of AI into fiscal management has several policy implications.

First, fiscal digitalisation should move beyond transaction processing towards analytical capability.

Second, AI investment should be evaluated not only according to technological performance but also according to measurable improvements in fiscal administration.

Third, AI systems should be integrated with existing financial-management infrastructure rather than developed as isolated applications.

Fourth, fiscal authorities should maintain human accountability for high-impact decisions.

Fifth, the government should develop common standards for AI-related data governance, model documentation and auditability.

These recommendations are consistent with the broader direction of India's AI policy, which combines AI development with an emphasis on safe and trusted deployment.

22. Future Empirical Research

The conceptual framework developed here creates several possibilities for empirical investigation.

Future studies can construct an annual or quarterly AIFMI using indicators of AI adoption across different fiscal institutions. The index can then be examined alongside fiscal-deficit data.

A second research direction would be to examine whether AI-enabled tax administration is associated with changes in tax revenue or compliance.

A third possibility is to investigate whether AI-supported expenditure monitoring affects expenditure efficiency.

A fourth research avenue involves forecasting performance. Traditional fiscal forecasts can be compared with AI-based forecasts using measures such as Mean Absolute Error or Root Mean Squared Error.

These approaches would allow the conceptual claims of this paper to be tested rather than assumed.

23. Limitations

This study is conceptual and policy-oriented. It does not estimate the proposed AIFMI or test a causal relationship between AI adoption and fiscal deficit.

Another limitation is the difficulty of measuring AI adoption consistently across government institutions. AI use can differ substantially in scale, quality and purpose.

Furthermore, fiscal outcomes are influenced by numerous factors, including economic growth, inflation, interest rates, taxation, public investment and external shocks. Consequently, future empirical research must control for these factors before attributing fiscal changes to AI adoption.

24. Conclusion

Artificial Intelligence is becoming increasingly relevant to the functioning of modern public administration. In the context of fiscal management, its importance lies less in replacing policymakers and more in improving the information and analytical systems on which fiscal decisions depend.

For India, AI can potentially strengthen revenue administration, expenditure monitoring, public procurement, subsidy management, fiscal forecasting and fiscal-risk assessment. The IndiaAI Mission provides an important institutional foundation for expanding responsible AI capabilities in the country.

However, AI should not be presented as a direct or automatic solution to fiscal deficits. A fiscal deficit is ultimately determined by the relationship between government receipts and expenditure, while AI primarily affects the efficiency with which these functions are administered.

The principal policy proposition of this paper is therefore that **AI should be treated as an enabling component of fiscal governance rather than as a substitute for fiscal policy.**

A successful AI-enabled fiscal system would combine technological capability with reliable data, institutional expertise, transparency, cybersecurity and human accountability. The proposed AIFMI provides a basis for future empirical research that can move the discussion from conceptual expectations towards measurable evidence.

The long-term contribution of AI to India's fiscal sustainability will therefore depend not simply on how much AI is adopted, but on **where it is applied, how its outputs are evaluated and whether its use remains embedded within accountable public institutions.**

References

Government of India. (2024). *Cabinet approves ambitious IndiaAI Mission to strengthen the AI innovation ecosystem*. Press Information Bureau.

OECD. (2025). *Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions*. OECD Publishing, Paris. <https://doi.org/10.1787/795de142-en>.

OECD. (2025). *AI in public financial management*. In *Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions*. OECD Publishing.

OECD. (2025). *AI in tax administration*. In *Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions*. OECD Publishing.

Office of the Principal Scientific Adviser to the Government of India. (2026). *Artificial Intelligence and India AI Mission*.

Press Information Bureau. (2024). *India commits to Safe and Trusted AI with new EoI initiative*. Ministry of Electronics and Information Technology.

Press Information Bureau. (2026). *In less than 24 months, India AI Mission has set up a foundation for development of AI ecosystem in the country*. Ministry of Electronics and Information Technology.

Copyright & License:

© Authors retain the copyright of this article. This work is published under the Creative Commons Attribution 4.0 International License (CC BY 4.0), permitting unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.