Ai-Driven Governance in The Public Finance Sector: Lessons from High-, Middle-, And Low-Income Countries for Bangladesh

By
Ahmmed Madhurja
24372001

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BRAC University
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It is hereby declared that

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2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
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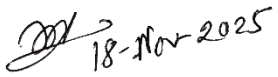

Ahmmed Madhurja
24372001

Approval

The policy note titled "**AI-Driven Governance in the Public Finance Sector: Lessons From High-, Middle-, And Low-Income Countries for Bangladesh**" submitted by

Ahmmed Madhurja (24373001).

of Summer 2024 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of **Master of Arts in Governance and Development** on **November 18, 2025**.

Examining Committee:

Supervisor:
(Member)

Nabila

Nabila Idris
Research Fellow
BIGD, BRAC University

Program Coordinator:
(Member)

Mohammad Sirajul Islam
Senior Academic Coordinator
BIGD, BRAC University

External Expert Examiner:
(Member)

Mehnaz Rabbani
Chairperson, MAGD Dissertation Viva Panel
Director, Operations, Strategy, and Partnership
BIGD, BRAC University

Departmental Head:
(Chair)

Imran Matin, PhD
Executive Director
BIGD, BRAC University

Executive Summary

Problem

Bangladesh stands a critical point to modernize its public finance sector to support its next phase of economic growth, moving from LDC status. To manage the economic shifts that will occur after graduation in 2026, it is imperative to address long-standing issues with efficiency and governance (Dawar & Dutta, 2025). To deal with the economic shifts that will occur after graduation, the government must raise tax revenue and spend funds more wisely (General Economics Division (GED), 2020). Bangladesh risks falling behind other nations and losing public trust without a clear plan to integrate modern technology in its policy solution, like- AI.

Findings

The country has initiated some reforms. Systems like the Integrated Budget and Accounting System (iBAS++) and electronic Government Procurement (e-GP) are already in place (Bhuiyan, Rahman, & Uddin, 2020). Bangladesh isn't quite prepared for a widespread AI rollout. It lacks a clear legal framework for AI, has a shortage of skilled workers, and possesses insufficient data infrastructure to train models (UNESCO, 2025). By taking lessons from other countries, it shows that success is possible. For example, a small AI pilot project in Armenia has shown the potential for increasing efficiency in tax collection (Farooq & Vatyan, 2025) and by establishing strong legal frameworks and trust, Estonia has emerged as a leader in digital governance with its “Bürokratt”, an AI agent for better online public services (e-Estonia, 2025).

Recommendations

The best path for Bangladesh is a careful, phased approach using a hybrid model that combines a cautious, "sandbox" method with strong public-private partnerships. This strategy should be rolled out in three stages, starting with small, low-risk pilot projects in the first 18 months, such as using AI for fraud detection in the e-GP system and creating a taxpayer chatbot. The second phase, from months 19-36, should expand successful pilots and build local talent by partnering with universities to create research centers, like the model used in Armenia (Farooq & Vatyan, 2025). The last stage, which begins in month 37, will concentrate on completely incorporating effective AI tools into important government systems. Integration of AI will build trust, control risks, and ensure AI adoption in a way that is sustainable and advantageous for the nation's future.

Keywords: Artificial Intelligence**,** Public Finance Management, AI Governance, National AI Strategy, Policy Transfer.

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List of Acronyms

PFM	Public Finance Management
AI	Artificial Intelligence
IG	Interim Government
LDC	Least Developed Country
ADM	Automated Decision Making
NLP	Natural Language Processing
iBAS	Integrated Budget and Accounting System
EFT	Electronic Funds Transfer
PPP	Public Private Partnership
LLM	Large Language Model
NBR	National Board of Revenue
CPTU	Central Procurement Technical Unit

AI-Driven Governance in the Public Finance Sector: Lessons from High-, Middle-, And Low-Income Countries for Bangladesh

1.0 Introduction

This policy brief proposes a roadmap for the Government of Bangladesh to utilize Artificial Intelligence (AI) to modernize its public finance sector. The purpose is to provide actionable policy recommendations that are ambitious, yet realistic. The world currently stands at a major technological leap and to keep up with that this policy brief was tailored to the unique context of Bangladesh. The decisions made today on economic governance will echo throughout the future and will determine the nation's trajectory in a new and challenging global landscape. As the clock ticks towards the 2026 graduation from the Least Developed Country (LDC) status, added with a political transition underway focused on restoring institutional integrity, the long-standing challenges of inefficiency and corruption within the public finance sector have become a threat to national progress (Dawar & Dutta, 2025).

To integrate AI into the public finance sector offers the opportunity to enhance fiscal discipline, improve service delivery, combat corruption, and strengthen accountability (Aldemir & Uysal, 2025). This will be crucial for navigating the economic challenges of LDC graduation and rebuilding public trust. This brief draws upon an extensive review of global experiences: from high-income pioneers to developing nations facing similar constraints to propose a feasible, phased implementation plan designed to build a resilient, efficient, and transparent PFM ecosystem for Bangladesh (Salar, Umer, & Faruque, 2024).

2.0 Problem Statement

Bangladesh's public finance sector is filled with complex challenges and requires necessary policy changes to sustain public trust, macroeconomic stability and overall development. The urgency of necessary policy challenges can be examined by several critical factors:

- **The Post-LDC Transition:** Bangladesh will achieve the status of a ‘Developing Country’ by the end of 2026. It will weaken the preferential trade benefits and there will be a reduction in official development assistance. The government's own strategic plan calls for raising the tax-to-GDP ratio from a meager 8.7% to 15% by FY31, a goal unattainable without a revolutionary leap in PFM effectiveness (General Economics Division (GED), 2020). Integration of Artificial Intelligence can offer substantial

improvements to sustain “LDC” graduation. AI will work as an asset for the Government of Bangladesh to focus on resource mobilization and increase public spending efficiency.

- **The Global AI Divide:** The worldwide economic impact of AI is expected to be uneven. High-income economies will receive much more benefits than low-income countries (Cerutti, et al., 2025). Bangladesh risks falling further behind without a sound strategy that can drive her growth. With already existing inequalities, the lag will hinder her development aspirations. The IMF's AI Preparedness Index shows a significant gap between wealthier economies and developing nations like Bangladesh. If any policy level change is not implemented, the advancement of AI will gradually heavily impact the already existing inequality (Georgieva, 2024).
- **Governance Challenges:** After the July revolution, the interim government found inefficiencies, lack of transparency, and widespread corruption that became deeply entrenched under the last regime. The scope of this issue is astonishing, with an estimated US$240 billion lost to illicit financial outflows between 2009 and 2023 (Dawar & Dutta, 2025). The Interim Government (IG) faces significant challenges in rebuilding public trust in institutions. Public sentiment regarding the election timeline may complicate efforts to enhance accountability.
- **The Need for Human-Centric AI:** The use of AI is not without risks. The complex models are still a “Black Box” because sometimes the behavior cannot be comprehended (Clark, 2025). Other times, complex models have algorithmic bias, data privacy, and it has the potential for probable job displacement. That’s why careful consideration and critical governance frameworks are required (Aldasoro, Gambacorta, Korinek, Shreeti, & Stein, 2024). The adoption of AI in national governance policies is not the critical challenge here but the main issue will be adopting AI in a way that it’s ethical, unbiased, and respects human rights (Santiso & Ubaldi, 2024).

Therefore, the problem is not merely about adoption of a new technology, rather a complex governance challenge that requires a holistic, strategic, and aspirational approach. The current political transition on one hand offers windows for deep reform, but on the other hand can creates economic uncertainty that demands holistic, transparent, aspirational, and resilient governance policy mechanisms to secure stability and guide the nation forward (Matin, 2025).

3.0 Background and Context

To propose an effective strategy that is unique to Bangladesh's context requires in-depth understanding of the global scenario of AI in public finance sector, drawing lessons from diverse national experiences.

3.1 Global Trends in AI in Public Finance

The application of AI in public finance is no longer a futuristic concept but an existing and evolving reality. Globally, AI is being called the "Herald of Fourth Industrial Revolution" (Ojo, 2018). Integrating AI is not only a way for businesses to move forward, but it can also make the public sector more accountable and better run (Aldemir & Uysal, 2025).

- **Efficiency and Decision-Making:** Algorithms can quickly process a lot of data. It can find patterns, make predictions, and do repetitive tasks on its own. So, an AI model makes operations much more efficient and decisions much better (Aldasoro, Gambacorta, Korinek, Shreeti, & Stein, 2024).
- **Fraud Detection and Risk Management:** AI and machine learning models are becoming very useful for finding fraud and managing risk in the public finance sector. Strong models can analyze transactional data in real-time to identify inconsistencies and suspicious patterns that would have been impossible for many expert human auditors to detect (Lee, 2025).
- **Improved Tax Compliance and Revenue Mobilization:** AI is being used to enhance tax compliance through predictive analytics to identify high-risk taxpayers for audits, AI-powered chatbots to assist taxpayers with their queries, and automated systems for processing tax returns (Aldemir & Uysal, 2025)

But there are challenges and risks in the global AI integration experiences that must be managed for an inclusive service implementation. These include:

1. AI models trained on historical data can keeps the existing biases which can cause discriminatory outcomes in areas like social welfare allocation or law enforcement (e-Estonia, 2025).
2. The use of AI in public finance requires access to large volumes of sensitive personal and financial data. It raises serious concerns about data privacy and cybersecurity (Künnapas, Maslionkina, Hinno, & Liberts, 2025).

3.2 Lessons from Other Countries

The experiences of other countries offer invaluable lessons for Bangladesh to adopt AI-driven government decisions, especially in the sophisticated public finance sector.

High-Income Countries: Pioneers and Pathfinders

High-income nations offer practical lessons on AI's potential and the need for integrating machines with the mind for strong governance.

- **Estonia**: Estonia has pioneered Automated Decision Making (ADM). Implementing systems like the virtual assistant "Bürokratt" (e-Estonia, 2025). Estonia has become a global leader in e-governance maintaining strict adherence to GDPR frameworks and maintaining transparency through working on the management of algorithmic biases. The guidance-based algorithms have opened new dimensions of ADM in public administration in Estonia (Pilving, 2023).
- **United States**: The local governments of the USA use AI for priority-based budgeting; for instance, Pittsburgh reallocated $41 million for climate action (NLC Partnerships, 2025). The federal government puts importance on Explainable AI (XAI) for fraud detection to build trust and establish integrity and transparency (Lee, 2025).

Middle-Income Countries: Growth and Governance

These countries provide relevant lessons for Bangladesh on overcoming institutional and digital divide challenges.

- **India**: In the podcast **The Missing Pieces in India's AI Puzzle: Talent, Data, and R&D,** Suri (2025) mentioned India faces significant challenges in developing talent, accessing quality data, and boosting R&D spending (Suri, 2025). However, India's government e-Marketplace (GeM) shows potential to enhance transparency in public procurement (Singh & Lal, 2022).
- **Armenia:** Armenia's successful pilot project to use AI to enhance tax compliance and fraud detection provides a potent model. The government took a proactive approach to risk management. They emphasized trust and transparency. The substantial focus is projected to increase tax compliance by 10-15% (Farooq & Vatyan, 2025).

Low-Income Countries: Leap and Innovation

The experience of Rwanda has shown how to overcome resource constraints with targeted, strategic approaches utilizing the countries resources.

- **Viet Nam**: The UNDP Viet Nam (2025) seminar report focuses on how this SEA country faces challenges in limited data sharing between agencies, and a knowledge gap is present in AI talent within the public sector (UNDP Viet Nam, 2025).
- **Rwanda**: A neural network project says that the country can find 92% of tax fraud cases (Murorunkwere, Tuyishimire, Haughton, & Nzabanita, 2022). The country's AI strategy is focused on building local capacity.

Comparative Analysis of AI in PFM - International Case Studies

Country	Income Level	Key PFM Application(s)	Key Successes / Challenges	Relevance for Bangladesh
Estonia	High	Automated Decision Making (ADM) via "Bürokratt"; Adherence to GDPR.	**Success:** Global leader in e-governance. **Challenge:** Managing algorithmic bias and ensuring transparency.	Provides a benchmark for a mature, transparent digital state and highlights the need for strong ethical/legal frameworks from the outset.
USA	High	Priority-Based Budgeting (e.g., Pittsburgh); Explainable AI (XAI) for fraud detection.	**Success:** Reallocating funds to strategic priorities; Building trust and transparency in automated systems.	Demonstrates the ROI of AI in optimizing budgets and the critical importance of XAI for gaining public acceptance of fraud detection tools.
India	Middle	Government e-Marketplace (GeM) for procurement transparency.	**Challenge:** Significant gaps in AI talent, quality data access, and R&D spending.	The GeM model offers a path to improving procurement. India's challenges with talent and data mirror Bangladesh's, underscoring the need for PPPs.
Armenia	Middle	AI pilot for tax compliance and fraud detection (10-15% potential increase).	**Success:** Problem-solving focus; Proactive risk management; Strong partnership with academia.	Provides the most direct and practical implementation model for Bangladesh. Shows how a partnership-driven pilot can overcome talent gaps and deliver quick, measurable results.
Rwanda	Low	Neural networks for tax fraud detection (92% accuracy).	**Success:** AI strategy focused on building local capacity and overcoming resource constraints.	Proves that high-impact AI applications are achievable in a low-income context with a targeted, strategic approach.
Viet Nam	Low	N/A	**Challenge:** Limited data sharing between government agencies; Significant knowledge gap in AI talent.	Highlights common barriers for developing nations that Bangladesh must address through data governance reform and human capital investment.

Table 1: Comparative Analysis of AI in PFM - International Case Studies

3.3 Bangladesh's Context: Readiness and Challenges

Bangladesh's adoption of AI in the public finance sector will be largely shaped by her current reforms, AI readiness, and larger political-economic landscape.

- **Current PFM System and Reforms:** Since 2016, Bangladesh has taken initiative in PFM reforms. Prime examples are- the Integrated Budget and Accounting System (iBAS++) in 2018 with a new 56-digit Budget and Accounting Classification System (BACS) to enhance financial transparency (Khan, 2019). These were designed to be detailed, support accrual accounting, and generate reports that are compliant with international standards of IPSAS and GFS.

  The rollout of electronic fund transfers (EFT) through iBAS++ for salaries, pensions, and social safety net payments has generated substantial efficiency gains, with estimated savings of Tk 59,804 crore (approximately $5.4 billion) projected over five years by eliminating wastage and corruption (The Daily Star, 2023).

  Additionally, the electronic Government Procurement (e-GP) is a key step toward efficiency in public procurement (Bhuiyan, Rahman, & Uddin, 2020). e-GP now handling approximately 65% of all public procurement by value, with a clear government commitment to increase this to 100% (Bangladesh Sangbad Sangstha, 2025). As of 2025, over 130,814 tenderers are registered on the system which shows its wide adoption (The Business Standard, 2025).
- **AI Readiness:** Bangladesh's AI readiness is far behind like its regional counterpart, India (Islam, Siddika, & Shaulin, 2025). The country is in an early development phase, facing significant resource constraints. The key challenges are:
  1. **Institutional Trust:** Limited public trust in government agencies could hinder the adoption of AI systems (Islam, Siddika, & Shaulin, 2025).
  2. **Human Capital:** Suri (2025) has commented on India's similar challenges that a major shortage of skilled AI professionals persists, with the education system remains unprepared and the youth passionate about NLP and machine learning leaving the country for better opportunity.
  3. **Data Infrastructure and Governance:** In its AI Readiness Assessment Report of Bangladesh (UNESCO, 2025) has shown that the access to quality data creates bottleneck due to siloed information within government ministries, and there is a lack of clear data-sharing provisions in the draft of Data Protection Act 2023.

4. **Legal and Regulatory Framework:** Bangladesh lacks a clear legal framework for AI. Though there is a national strategy and draft policy, it has been slow to put into action (OLD BAILEY, 2025).

- **Political and Economic Context:** The country is currently under an interim government, and elections are expected to be held next year. This creates both instability that can make reform harder and a unique chance to make big changes to how the government works, like using AI to win back the trust of the people (Dawar & Dutta, 2025). The interim government's focus on bringing people's trust back in government institutions is in line with AI's ability to make public finances more open and trustworthy.

Following is the SWOT analysis of Bangladesh's AI Readiness in context to her internal and external environment:

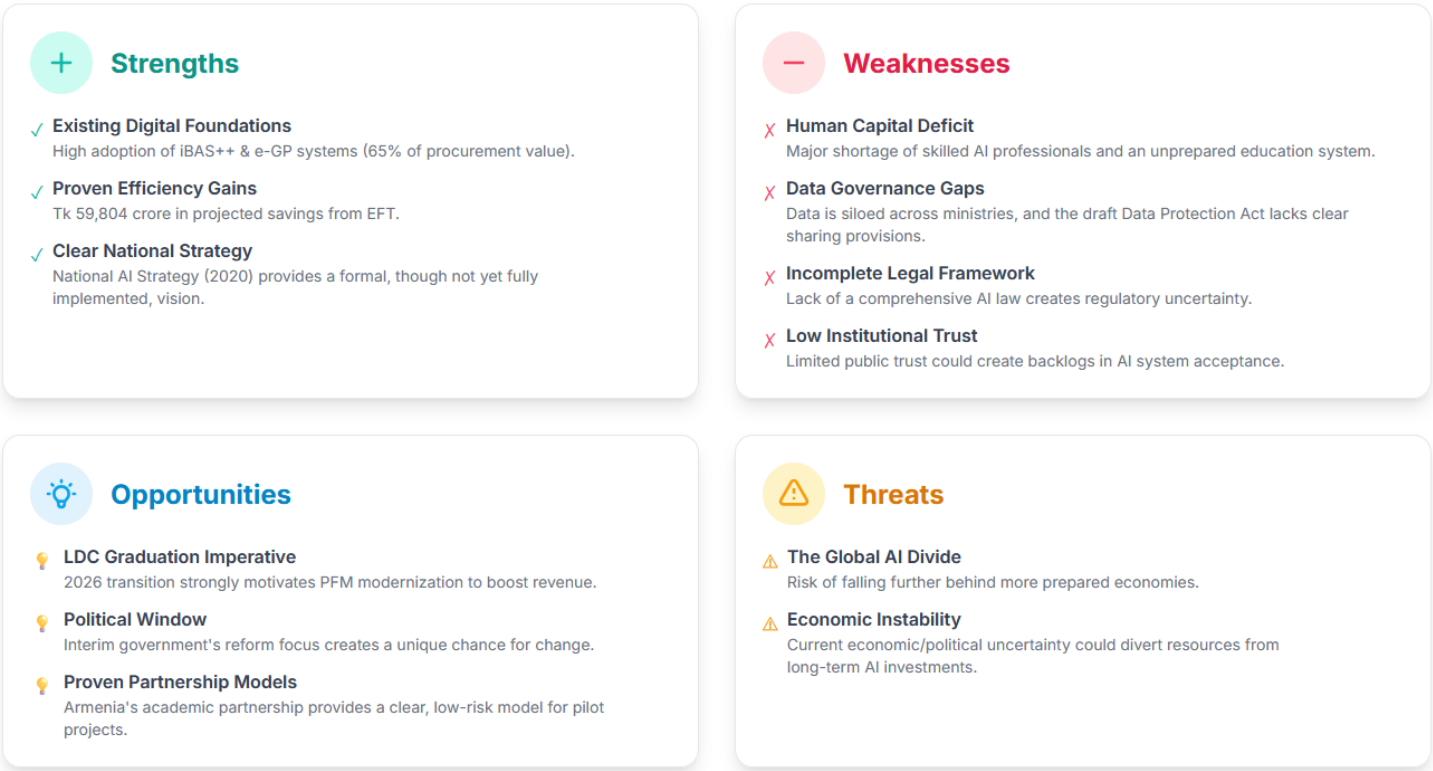

Figure 1: AI Readiness of Bangladesh: SWOT Analysis

4.0 Policy Options

The Government of Bangladesh needs decide on an aspirational yet achievable course of action to incorporate AI into public finance given the complexity of the opportunities and challenges.

4.1 Option A: Aggressive, Large-Scale AI Adoption

The creation of a centralized AI platform for the public sector, a large upfront investment in technology infrastructure, and a national effort to upskill public employees would all be necessary to achieve this. The government would oversee creating and implementing AI solutions, perhaps with assistance from foreign technology suppliers. The aim would be rapid digital transformation of the public finance sector.

- **Feasibility and Potential Impact:** This option yield substantial benefits, such as increased transparency, notable efficiency gains, and a clear indication to foreign investors of Bangladesh's dedication to modernization. However, it also carries very high risks.

  A large-scale, top-down approach is likely to be difficult given Bangladesh's current level of AI readiness, which includes gaps in infrastructure, a lack of talent, and low institutional trust (Islam, Siddika, & Shaulin, 2025); (UNESCO, 2025).

  For a nation experiencing economic strain, the high implementation costs could be a significant obstacle (Amiruddin, Syamsuddin , Muntu, Helda, & Rahadi, 2024). Additionally, as demonstrated by the cautionary tale of the Dutch childcare benefits, a hasty implementation without sufficient safeguards may result in unforeseen consequences like algorithmic bias and a backlash against the technology (Heikkilä , 2022).
- **Trade-offs:** This strategy puts speed ahead of caution and, should it fail to develop the requisite institutional and human capacity, could hamper the long-term viability of AI adoption.

4.2 Option B: A Cautious, Incremental "Sandbox" Method

This method would involve identifying a few "low-hanging fruit" areas where AI could have a high impact with relatively low risk. Pilot projects might, for instance, concentrate on creating an AI-powered chatbot to help taxpayers, employing predictive analytics to enhance resource allocation in a particular social sector, or using AI to identify fraud in the e-GP system. To

utilize experimentation and learning in a controlled environment, these pilots would be carried out in a "sandbox."

- **Feasibility and Potential Impact:** This option is feasible for Bangladesh given its current resource constraints and capacity limitations. It allows for a more practical and cost-effective approach to AI adoption. The effectiveness of this strategy for developing nations is demonstrated by the accomplishment of Armenia's tax administration pilot project (Farooq & Vatyan, 2025). This strategy can create momentum and eventually support broader AI adoption by beginning small and showing measurable results. One thing is noteworthy here that the possible influence on enhancing public trust and institutional capacity. The drawback of this strategy is that, in contrast to a more aggressive approach, it might take longer to produce broad benefits.
- **Trade-offs:** The primary trade-off is between the degree of risk and the rate of change. This option puts sustainability, learning, and caution ahead of quick, widespread deployment. For a nation like Bangladesh, it is a more practical and responsible course of action, even though it might not appease those who support a more ambitious AI agenda.

4.3 Option C: A Public-Private Partnership (PPP) Driven Model

Under this model, the government would aggressively pursue collaborations with regional and global technology firms, academic institutions, and non-governmental organizations. The government might, for instance, establish an "AI for PFM Challenge Fund" to encourage creative private sector solutions. Similar to the collaboration between the Armenian government and the American University of Armenia, it might also set up collaborative research centers with academic institutions to create innovative AI applications for the public sector (Farooq & Vatyan, 2025).

1. **Feasibility and Potential Impact:** In addition to being very practical, this option has the potential to overcome the government's own capacity limitations by utilizing the energy and experience of the private sector and academia. It can generate new economic opportunities and support a thriving local AI ecosystem. According to India's experience, developing a robust AI talent pool and R&D capacity requires a public-private partnership (Suri, 2025). It has a very high potential impact on human capital development and innovation. But there are drawbacks to this strategy as well. To effectively manage PPPs and guarantee that they serve the public interest, a strong governance framework is necessary. Concerns regarding data security and privacy

would also need to be carefully considered, and there is a chance that private sector interests will take precedence over other agenda items.

- **Trade-offs:** This model has the potential to boost innovation, but to control the risks involved with private sector participation, the government must develop strong regulatory and overseer capabilities.

5.0 Recommendation

Policy Option	A. Aggressive, Large-Scale Adoption	B. Cautious, "Sandbox" Method	C. Public-Private Partnership (PPP) Model
Impact on PFM Modernization	**High:** Potential for rapid, systemic transformation of the entire PFM ecosystem.	**Medium:** Impact is initially limited to pilot areas but has high potential as it scales successfully over the long term.	**High:** Leverages private sector innovation and expertise to accelerate modernization.
Feasibility (Technical and Financial)	**Low:** Requires massive upfront investment, advanced technical skills, and data infrastructure that Bangladesh currently lacks.	**High:** Fiscally responsible and technically manageable given current capacity limitations. Use existing systems like e-GP as a starting point.	**High:** Overcomes the government's internal limitations on talent and R&D capacity.
Implementation Speed	**High:** If successful, benefits could be delivered quickly and widespread easily.	**Low:** The primary drawback is that it will take longer to achieve nationwide benefits.	**Medium:** Can deliver solutions faster than a purely government-led approach.
Risk of Failure and Negative Consequences	**Very High:** High risk of costly failure, technological lock-in with foreign vendors, and potential for large-scale negative outcomes.	**Low:** Failures are contained, and lessons are learned in a controlled environment, minimizing risk.	**Medium:** Carries risks of private sector capture, data privacy concerns, and requires strong government oversight, which is a current weakness.
Sustainability and Trust Building	**Low:** Fails to build local capacity and could erode public trust if failures occur.	**High:** The incremental, evidence-based approach is ideal for building institutional capacity and public trust over time.	**Medium:** Can build a local AI ecosystem but requires a strong governance framework to ensure public interest and trust are prioritized.

Table 2: Decision Matrix: AI Adoption Strategies for Bangladesh's Public Finance Sector

After evaluating the policy options on five different criteria across impact, practical application, and long-term sustainability, this policy brief recommends a **hybrid approach that prioritizes Option B (A Cautious, "Sandbox" Method), with supportive elements of community engagement from Option C (A Public-Private Partnership Model)**. The chances of delivering inclusive and effective PFM reform will be maximized by building foundational

capacity through controlled, evidence-based pilot projects, while simultaneously leveraging the expertise of the private sector and academia to accelerate innovation and overcome talent gaps. Option B and Option C are complementary and mutually reinforcing. Simply put, a cautious sandbox approach (Option B) without the innovation and expertise from private partners (Option C) would be too slow and risk using outdated technology. Subsequently, a PPP-driven model (Option C) without the controlled, evidence-based structure of a sandbox (Option B) would be too risky and could be captured by private interests, failing to build public trust. By pursuing both, Bangladesh can steer a middle path that avoids the high-risk, high-cost pitfalls of large-scale adoption (Option A) while still encouraging innovation in a fair and sustainable manner.

Thus, this hybrid approach would mean:

- **Establish Governance First:** Immediately form a multi-stakeholder "AI for PFM Task Force" with members from government, the private sector, and academia to provide the strong oversight required to manage risks and ensure public interest is served.
- **Launch "Sandbox" Pilots via PPPs:** Initiate the targeted, low-risk pilot projects (e.g., fraud detection in the e-GP system, taxpayer assistance chatbot) by actively structuring them as public-private partnerships, inviting both local and international firms to co-develop solutions.
- **Build a Sustainable Talent Pipeline:** Formalize partnerships with universities and research institutions, as demonstrated by the successful Armenia model, to create collaborative research centers. This will ensure the long-term development of local AI talent and anchor the national AI ecosystem.

6. Implementation Plan

A step-by-step, collaborative, and evidence-based implementation plan is the foundation of the hybrid approach. The objectives are to prove value through focused pilot projects, and promote long-term, sustainable growth. Every action is realistic, at the same time aspirational for Bangladesh's long-term development objectives.

6.1 Implementation Timeline

6.1.1 Phase 1: Foundational Pilots and Governance (Months 0-18)

Objective: To establish governance, prove value and build momentum through successful, low-risk pilot projects in a controlled setting.

Key Actions:

1. **Conduct Data Readiness Audit:** Immediately commission a comprehensive audit of data assets within the iBAS++, e-GP, and NBR systems. This audit will assess data quality, accessibility, and current governance, producing a foundational 'Data Strategy' to determine the precise technical feasibility of the initial pilot projects.
2. **Establish Governance Framework:** Form a multi-stakeholder "AI for PFM Task Force" with members from the Ministry of Finance, ICT Division, NBR, CPTU, academia, reputable civil society organizations, and the private sector. This team will oversee the project, develop ethical standards, and manage PPPs.
3. **Launch "Sandbox" Pilots:** Start two practical pilot projects:
    - **e-GP Fraud Detection:** Deploy AI within the e-GP system to spot coordinated bidding patterns and anomalies.
    - **Taxpayer Assistance Chatbot:** Develop a chatbot powered by machine learning to answer frequently asked taxpayer questions, reducing administrative workloads and improving service quality.
4. **Launch National Programs :** Initiate government funded projects to seek innovative solutions of specific PFM problems from regional and global tech companies. It can be structured as a policy hackathon where Computer Science students will exchange information and collaborate with Public Administration students to propose incremental changes (Thailand Policy Labs, 2025).

6.1.2 Phase 2: Capacity Building and Scaling (Months 19-36)

Objective: To expand successful pilot projects, build human capital, and form strategic partnerships to address more complex PFM challenges.

Key Actions:

1. **Scale Successful Pilots:** After a thorough evaluation of Phase 1 pilots, begin a wider rollout of the e-GP fraud detection module and the taxpayer chatbot.
2. **Establish Collaborative Research Centers:** Form formal partnerships with leading universities (e.g., BUET, Dhaka University, BRAC University) to create research centers dedicated to AI in public finance, following the successful Armenian model (Farooq & Vatyan, 2025). This will create a sustainable pipeline of local talents who are interested in working on NLPs, LLMs and machine learning.

3. **Launch Second Wave of Pilots:** Launch more complex pilot projects, such as using predictive analytics for risk-based tax audits or optimizing capital allocation in a key social sector like health or education.

6.1.3 Phase 3: Integration and Modernization (Months 37+)

Objective: To embed AI as a core component of Bangladesh's PFM ecosystem, moving from discrete projects to integrated, system-wide capabilities.

Key Actions:

1. **Full System Integration:** Integrate mature AI models as standard features within essential government systems like iBAS++ and e-GP.
2. **Develop Advanced Capabilities:** Examine cutting-edge applications such as AI-driven macroeconomic forecasting and priority-based budgeting once gaining a strong data infrastructure and talent pool.
3. **Continuous Improvement:** Ensure sustained government funding for training, R&D, and the evolution of the regulatory framework to keep pace with technological advancements.

Phase	*Key Actions*	*Responsible Parties*	*Timeline (in Months)*
Foundation	Establish AI for PFM Task Force; Launch e-GP fraud & taxpayer chatbot pilots; Launch at least one innovation campaigns.	GoB, Private Sector Partners, Academia	0-18
Scaling	Scale successful pilots; Establish collaborative research centers; Launch advanced pilots (e.g., risk-based audits).	GoB, Academic Partners, Private Sector Partners	19-36
Integration	Integrate AI tools into iBAS++ and e-GP; Develop advanced forecasting & budgeting models; Ensure long-term ecosystem funding.	GoB, Relevant Ministries (Finance, Planning)	37+

Table 3: Implementation Timeline (At a Glance)

6.2 Implementation Strategies

To ensure the success of the phased plan, the following strategies must be pursued concurrently.

6.2.1 Financial Strategy and Funding Sources

- **Seed Funding from Efficiency Gains:** Utilize a small percentage (e.g., 1-2%) of the projected Tk 59,804 crore ($5.4 billion) in savings generated by the iBAS++ EFT system (The Daily Star, 2023) to create a dedicated "PFM Modernization Fund." This reinvests savings directly into future efficiencies.

- **Development Partner Collaboration:** Actively pursue technical and financial assistance from partners such as the World Bank, IMF, and Asian Development Bank, who have a strong track record of supporting governance and digital transformation projects.
- **PPP Co-Investment:** To attract high-quality private partners, the PPP structure will be clearly defined, offering a compelling value proposition. This includes outlining specific partnership models (e.g., co-development agreements, service contracts for successful pilots) and articulating the benefits for firms, such as access to a new market.

6.2.2 Stakeholder Management and Political Feasibility

- **Formalize the Task Force:** The "AI for PFM Task Force" will be formally constituted with representation from the Ministry of Finance (Finance Division), Ministry of Planning, ICT Division, and the National Board of Revenue (NBR). This ensures high-level ownership.
- **Change Management and Communication:** Implement a change management strategy focused on securing buy-in from civil servants. This will involve workshops to communicate the benefits of AI (e.g., reducing repetitive tasks, enabling higher-value analytical work) and clearly addressing fears of job displacement by emphasizing AI as a tool for augmentation, not replacement.
- **Anticipate and Address Resistance:** Proactively engage with agencies like the NBR and CPTU to demonstrate how AI tools can enhance their institutional effectiveness and help them meet their mandates, mitigating potential resistance to changes that increase transparency.

6.2.3 Risk Mitigation and Governance Framework

- **Foundational Legal Action:** In Phase 1, the Task Force will draft a "Digital Governance Ordinance." This ordinance will provide a clear legal basis for inter-ministerial data sharing for the explicit purpose of AI model training, proposing necessary amendments to the draft Data Protection Act 2023 to enable, yet stringently govern, this use case.
- **Technical Feasibility Study:** Before pilot launch, commission a technical feasibility study to map the data architecture of iBAS++ and e-GP. This study will identify the necessary APIs, data pipelines, and technical resources required for successful integration, providing a clear technical roadmap.

- **Ethical AI and Bias Audits:** Mandate that all pilot projects undergo a mandatory "Algorithmic Bias Audit" before deployment. This process, overseen by an independent academic or civil society partner, will assess training data and model outputs to minimize the risk of discriminatory outcomes.

The recommended PPP-driven model requires a collaborative governance structure. This framework ensures that expertise from all sectors is leveraged while maintaining public accountability.

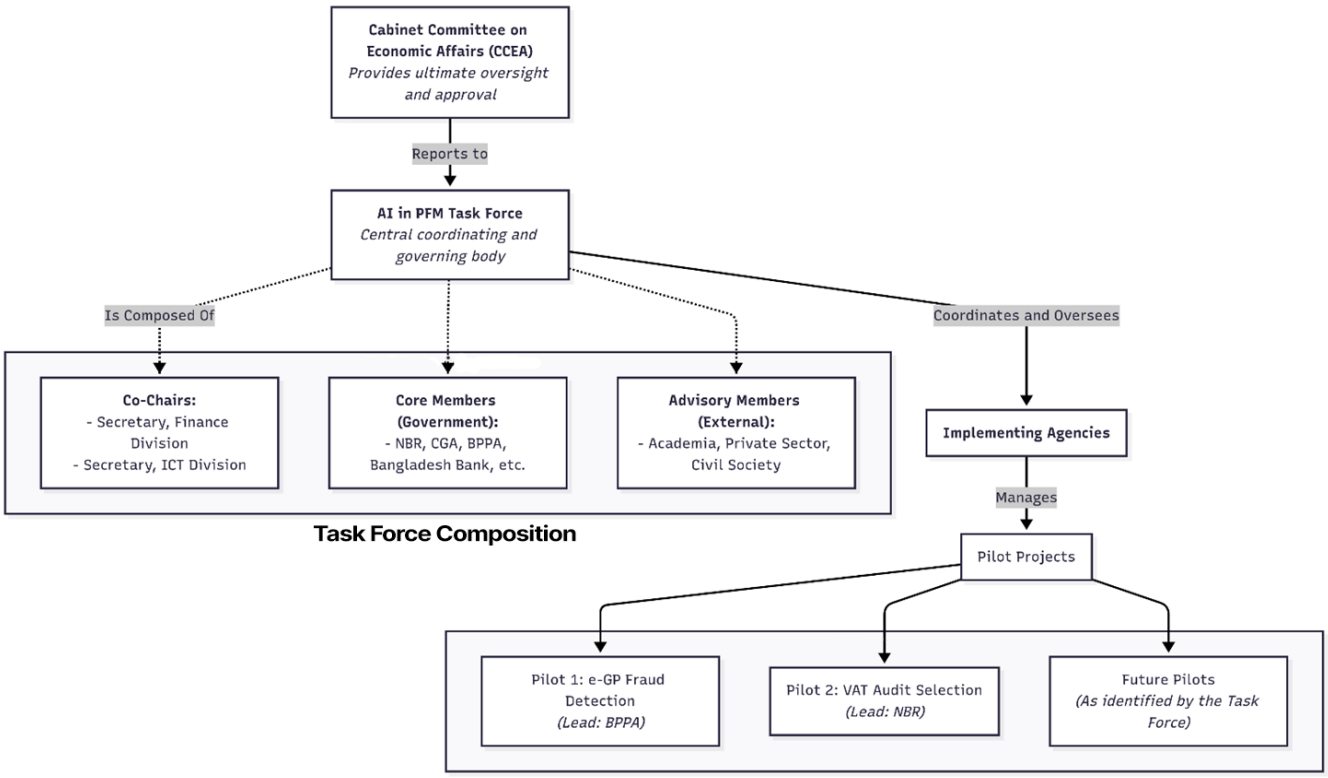

Figure 2: Proposed Governance Framework for AI in PFM

7.0 Conclusion

Modernizing Bangladesh's public finance sector is more than just a technical improvement; it is a vital requirement for safeguarding the country's economic future and upholding its social composure. While corruption and inefficiency pose serious problems, artificial intelligence has greater potential for transformation if used properly. High-income nations are leading the way in advanced applications of AI, while developing countries are already overcoming obstacles in particular fields (Aldemir & Uysal, 2025).

Therefore, this policy note suggests a practical way forward: **a mixed strategy that combines a careful, gradual "sandbox" method with an active PPP model**. This step-by-step and collaborative approach is meant to minimize risks and fit Bangladesh's context. It focuses on learning from small, impactful pilot projects while also using the skills and ideas of the private sector and academic institutions to address local capacity challenges.

As a result, Bangladesh can create a contemporary, open, and effective PFM system by taking the recommended policy action. Better financial discipline through increased revenue collection and decreased fraud, improved public service delivery, increased accountability, and above all the restoration of public confidence in government institutions are the expected outcomes. The best opportunity to address present problems, manage upcoming political shifts, and guarantee a secure and prosperous future for the nation is offered by this evidence-based strategy.

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Appendices

Appendix A: Policy Proposal

Background

As Bangladesh approaches its graduation from Least Developed Country (LDC) status, the demand for innovative solutions to modernize its public finance sector becomes increasingly urgent. Artificial Intelligence (AI) has emerged as a transformative force in governance, with applications ranging from predictive analytics in budget allocation to fraud detection in public expenditures. High-, middle-, and low-income countries have experimented with AI-driven governance with varying levels of success, offering valuable lessons for Bangladesh.

For example, Estonia, a high-income country, has incorporated AI in taxation systems to enhance efficiency and compliance (Government of Estonia, 2023). In middle-income nations such as India, AI-powered tools in public procurement have improved transparency and reduced corruption (Singh & Lal, 2022). Added with, Rwanda, a low-income country, has taken AI initiatives that have shown potential in niche applications like agricultural finance despite having limited resource (World Economic Forum, 2024). These examples highlight the diverse contexts and conditions under which AI integration in public finance governance has been pursued.

This study aims to examine the feasibility of adopting AI-driven governance models in Bangladesh's public finance sector, drawing lessons from different countries. The research will address whether economic, institutional, and technological conditions in Bangladesh are conducive to successful policy transfer and what modifications might be necessary.

Significance

As Bangladesh transitions to a middle-income country, it faces significant challenges in improving governance efficiency, reducing corruption, and optimizing resource allocation. Recent political developments in Bangladesh, including the establishment of an interim government under Nobel laureate Professor Dr. Muhammad Yunus following the resignation of Sheikh Hasina, highlight the urgent need for stable and transparent governance. This political transition, while introducing a period of instability, underscores the critical role of innovative governance tools like AI in restoring public trust and maintaining progress toward sustainable development.

Furthermore, as Bangladesh prepares for its LDC graduation in November 2026, the implications of these political events cannot be overlooked. Political instability can deter foreign investment, reduce economic growth, and disrupt essential reforms. Incorporating AI-driven governance systems during this transition period offers a way to ensure policy continuity and economic resilience.

Lessons from other countries will provide a roadmap for tailoring these solutions to Bangladesh's unique context. By ensuring a well-informed and context-sensitive approach, this research contributes to the broader goal of sustainable development and effective governance in Bangladesh

Research Questions

1. **Core Inquiry:** What lessons can be drawn from high-, middle-, and low-income countries' use of AI-driven governance processes for application in Bangladesh's public finance sector?
2. **Specific Questions:**
    a) What specific examples exist of AI integration in government finance projects across high-, middle-, and low-income countries?
    b) What are the examples of similar tech in BD in context of tech driven process and what we can learn from it?

Objectives

1. To identify successful and unsuccessful examples of AI integration in public finance governance across different income categories.
2. To evaluate the similarities and differences in economic and institutional capacities among high-, middle-, and low-income countries, with a focus on Bangladesh.
3. To provide actionable recommendations for implementing AI-driven governance in Bangladesh's public finance sector.

Methodology

1. Secondary Literature Review

A review of journal articles, government reports, case studies, and white papers will be conducted to understand the theoretical and practical aspects of AI-driven governance in public

finance. Sources will include publications from the World Bank, OECD, UNDP, and academic databases such as JSTOR and SpringerLink.

2. Case Studies

The study will analyze specific instances of AI integration in public finance governance of various countries in the following categories:

i. Reports

ii. Conference proceedings

iii. **OECD's Insights**

The OECD provides comprehensive data on the use of AI across various countries, highlighting different use cases and the extent of AI adoption.

iv. **World Bank's Analysis**

The World Bank has published reports examining the opportunities and challenges of deploying AI in government, focusing on enhancing service delivery and reducing corruption.

Feasibility Criteria Development

A comparative framework will evaluate similarities and differences in economic conditions, governance capacities, and institutional readiness across the selected countries and Bangladesh. Key indicators will include GDP per capita, ICT infrastructure, human capital, and governance indices. Drawing from the literature and case studies, feasibility criteria for policy transfer will be established. These will include economic compatibility, institutional capacity, legal frameworks, and public acceptance.

Timeline:

Phase	Fall 2024	Spring 2025				Summer 2025	
	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25
Proposal Submission							
Literature Review							
Case Study Development							
Case Study Analysis							
Report Writing							
Finalization							

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Appendix B: Annotated Bibliography

Annotated Bibliography includes sources that establish theoretical foundations for understanding the role and impact of Artificial Intelligence driven governance in Bangladesh's Public Finance Sector. It explores core concepts such as the economic implications of AI, its potential to enhance efficiency, transparency, accountability, and decision-making within Public Finance Management (PFM), and the fundamental principles guiding the modernization of public finance through technological adoption.

1.1 Current Situation

1. **Artificial Intelligence for Financial Accountability and Governance in the Public Sector: Strategic Opportunities and Challenges** (Aldemir & Uysal, 2025)**.**

   Type: Qualitative Case Study & Theoretical Review.

   This article calls AI a "game-changer" for public finance sector accountability and governance. AI provides significant improvements in decision-making, operational efficiency, transparency, and fraud detection. Drawing on case studies of Estonia, Singapore, and Finland to illustrate these benefits; for example, automated tax filing and predictive budget analysis. While the authors correctly identify these universal challenges, they are presented as parallel considerations. For Bangladesh, these are foundational roadblocks. For example, the need for data privacy law is a non-negotiable prerequisite before large-scale citizen data can be leveraged for AI, not simply a

guideline to be developed during implementation.

2. **Intelligent financial system: how AI is transforming finance** (Iñaki , Gambacorta, Korinek, Shreeti, & Stein, 2024)**.**

   Type: Working Paper (BIS Working Paper No. 1194) (Theoretical/Conceptual Review).

   This BIS working paper provides a conceptual framework for analyzing the impact of AI, including Generative AI and AI agents, on the financial system, covering financial intermediation, insurance, asset management, and payments. It discusses the influence of AI in its enhanced capacity to process information, analyze data, identify patterns, and make predictions. The paper also highlights significant risks, including the lack of transparency in complex machine learning models ("black box" effect). AI's dependence on large volumes of data can be a threat to consumer privacy and expose cybersecurity vulnerabilities, added with the potential for algorithmic bias. The key challenge here is translating these concerns into specific PFM context of Bangladesh. The primary risks are inefficiency and corruption, not market failure. Its framework needs relevant changes to make it relevant for public sector auditing and expenditure control.

3. **The Global Impact of AI: Mind the Gap** (Cerutti, et al., 2025).

   Type: IMF Working Paper (Empirical Modeling & Policy Analysis).

   This IMF working paper argues that AI's global economic impact will be uneven, likely exacerbating income inequality between advanced economies (AEs) and low-income countries (LICs). This disparity is attributed to differences in sectoral AI exposure, preparedness (digital infrastructure, human capital, institutions), and access to AI technologies. AEs are better positioned to harness AI for growth, while many EMs and LICs may lag, widening the income gap. This paper provides the core economic imperative for Bangladesh's AI strategy. The **widening income gap** is not an abstract future risk; it is a direct threat to the country's post-LDC graduation development model. For policymakers, this reframes AI adoption from a **nice-to-have** technological upgrade to a **must-have** strategic necessity to avoid being locked into a new form of global economic disadvantage just as the country transitions to a new status.

4. **Artificial intelligence for low-income countries** (Salar, Umer, & Faruque, 2024)**.**
   Type: Position Paper/Theoretical Argument.
   This article advocates for the application of Artificial Intelligence in Low-Income Countries (LICs), which holds that AI can significantly reduce economic and administrative hassles, thus improving well-being. It highlights the possibilities of AI in governance through the automation of procedures, enhancing efficiency, increasing the participation and trust of citizens, enabling interoperability, and mitigating financial corruption (citing an example of an electronic land record system in Karnataka, India, which reduced waiting times and bribery). The paper's own proposed strategies: such as- building infrastructure, fostering innovation, and strengthening institutions highlight the monumental scale of the task. For Bangladesh, this is not a simple checklist but a long-term governance challenge requiring immense political will, which the paper's theoretical framing may downplay.

5. **Leveraging AI, Machine Learning, And Big Data for Enhancing Tax Compliance, Fraud Detection, And Predictive Analytics in Government Financial Management** (Pamisetty, Pandiri, Singireddy, Annapareddy, & Kumar , 5. Leveraging AI, Machine Learning, And Big Data For Enhancing Tax Compliance, Fraud Detection, And Predictive Analytics In Government Financial Management, 2022)**.**
   Type: Conceptual Review/Theoretical Paper.
   This article explains how big data, machine learning, and artificial intelligence (AI) can be combined to greatly improve government financial management, especially in the areas of tax compliance, fraud detection, and predictive analytics. It emphasizes how these technologies can enhance risk management and result in financial operations that are more timely, accurate, comprehensive, transparent, and insightful. The paper suggests a hybrid method (combining unsupervised and supervised approaches) for optimal performance in these areas. The suggestion of advanced analytical models is premature when the immediate need is to build a foundational group of data scientists and analysts. For Bangladesh, the primary bottleneck is talent, not the choice of algorithm and without clean, integrated, and accessible data, the ideal outcomes the paper describes are simply not achievable.

6. **Artificial Intelligence in Economic Policymaking** (Wirjo, Jr., Vasquez, & Andres, 2022).

   Type: Policy Brief.

   This APEC policy brief argues that AI is a powerful tool with significant potential to enhance economic policymaking across its entire cycle: agenda setting (analyzing large datasets to identify critical challenges), policy formulation (providing evidence-based insights, estimating impacts, projecting costs/benefits. Such as, the **AI Economist** for tax policy), decision-making (improving speed and quality in legislative bodies), implementation (automating processes, real-time analysis for service delivery, such as-traffic systems, emergency services), and evaluation (assessing policy impact more accurately). While the brief correctly identifies the necessary components for responsible AI, it presents them as a list of goals rather than an ordered strategy. For Bangladesh, these elements are deeply interdependent: trust cannot be built without a working governance framework, and partnerships are ineffective without a functioning digital ecosystem. The brief effectively **outlines what needs to be done** but **offers little guidance on how a low-capacity state should** implement these immense undertakings. It provides the destination but not the first steps.

1.2 Global Lessons

This subsection dives into practical applications and empirical findings related to AI in Public Finance Sector across different global contexts. It is further divided to distinguish between experiences in developed nations, which often pioneer advanced e-governance and AI solutions, and those in developing countries and LDCs, whose challenges and resource constraints may more closely mirror Bangladesh's situation. The aim is to attain actionable insights, identify common success factors and pitfalls. This understanding will shape the contextual variables to assess the adoption and impact of AI in public finance.

1.2.1 Developed Country Experiences

1. **Estonia and automated decision-making: challenges for public administration** (e-Estonia, 2025)**.**

   Type: Online Article/Expert Commentary.

   This article discusses Estonia's pioneering utilization of automated decision-making (ADM) systems in public administration, some of which include Bürokratt (virtual

assistants), OTT is (processing unemployment insurance), and ABC Gates (automated border control). It points to efficiency gains while also tackling squarely the big questions of algorithmic bias, where AI models can entrench discrimination (e.g., in welfare or recruitment), and of algorithmic lack of transparency, since many AI models are **black boxes**, and their rationale is not explainable or legally challenging. The article cites the Dutch childcare benefits scandal as a paradigmatic cautionary tale and delineates the significance of regulatory adherence to structures such as GDPR and the EU AI Act to maintain public trust. What we can take from the article is Bangladesh cannot simply import Estonian applications without first solving this fundamental data-sharing problem, a government decision that will violates basic principles of administrative justice and due process, making it legally and constitutionally unviable without a complete rethinking of accountability frameworks.

2. **Enhancing Fraud Detection in Federal Financial Systems through AI and Machine Learning** (Lee, 2025)**.**

   Type: Professional Association Article/Expert Analysis.

   This article argues that traditional fraud detection techniques struggle with the scale and sophistication of financial crimes targeting government funds in federal systems (implicitly U.S.). It asserts that by automating the detection of unusual patterns, evaluating complicated data (both financial and non-financial), and minimizing human error, artificial intelligence (AI), in particular machine learning (ML) and bio-inspired algorithms (such as neural networks and genetic algorithms), provides revolutionary answers. The emphasis is on incorporating AI into Enterprise Risk Management (ERM) frameworks. In order to guarantee the transparency and justifiability of AI-driven fraud detection, which is essential for stakeholder confidence and regulatory compliance, the article also emphasizes the significance of Explainable AI (XAI) approaches like SHAP and LIME. The article provides valuable technical direction but is grounded in a high-capacity U.S. federal context that differs significantly from Bangladesh. Its advocacy for integrating AI into Enterprise Risk Management (ERM) frameworks highlights a key gap, as these formal risk management structures are not widely established in Bangladesh's public sector.

3. **The Budgeting Process: Governments Find Power in AI** (NLC Partnerships, 2025)**.**
   Type: Professional Association Article/Industry Publication.
   This NLC article argues that AI, particularly through priority-based budgeting models, is revolutionizing public sector budgeting in U.S. local governments and school districts. It contends that AI helps overcome limitations of traditional methods by analyzing complex budget data to identify efficiencies, make predictions for resource reallocation, and align spending with community priorities. Examples from Pittsburgh (reallocating $41M for climate action), Washington County, WI (making Parks & Rec self-sustaining), and Fort Worth, TX (aligning resources with public safety/infrastructure) illustrate these benefits. AI also eases the budgeting burden amid workforce shortfalls and enhances transparency by showing how investments align with strategic goals. The article's examples are compelling but draw from a U.S. local government context that is structurally different from Bangladesh's centralized national system. The priority-based budgeting model champions a set of clear, data-driven, and agreed-upon priorities. It is a precondition much harder to establish in the politically complex environment of national ministry budget allocations in Bangladesh.

4. **Current AI applications by Estonian tax authorities and use case scenarios** (Künnapas, Maslionkina, Hinno, & Liberts, 2025)**.**
   Type: Research Paper/Case Study.
   This paper details AI applications by the Estonian Tax and Customs Board (ETCB). It focuses on three main uses: (1) Language models (chatbots) for taxpayer assistance, aiming to improve understanding of tax obligations and support proactive compliance. (2. Network models using graph theory to detect unusual connections between entities/individuals for fraud detection (referencing Rwanda's 92% accuracy in income tax fraud detection and Spain's use of neural networks for taxpayer segmentation). (3) X-ray imaging with computer vision for customs to identify undeclared/misclassified goods. This paper offers highly valuable, concrete examples of operational AI tools. The taxpayer-assistance chatbot represents a feasible quick win for Bangladesh's National Board of Revenue (NBR), as it is less dependent on deep data integration and could immediately improve citizen services. However, the more advanced network models for fraud detection present a steeper challenge as it will require human supervision and tax officials to interpret and challenge AI outputs, requiring a critical human capital investment.

1.2.2 Developing Country and LDC Experiences

This sub-section shift focuses on the adoption and impact of AI in the public financial management of developing countries and Least Developed Countries (LDCs). It investigates the challenges of integrating AI in countries with institutional and economic environments more similar to Bangladesh's. We'll look at case studies and actual data from South Asia (like India), Africa (including Rwanda, Ghana, Kenya, and Armenia), and Latin America (like Brazil, Mexico, Colombia, and Chile). Contextually relevant issues including a lack of data, inadequate infrastructure, and a shortage of human resources are to be identified, along with creative solutions and the function of global collaborations. These experiences offer more directly transferable lessons for Bangladesh as it formulates its PFM modernization strategy.

1. **The Missing Pieces in India's AI Puzzle: Talent, Data, and R&D** (Suri, 2025).
   Type: Policy-Oriented Analysis/Think Tank Report.
   This Carnegie India paper assesses India's ambition to become a global AI leader, identifying significant gaps in talent, data, and R&D. Despite a large STEM pool, India faces shortages in top-tier AI research talent, quality issues in AI education, and talent migration. Access to large volumes of high-quality, India-specific data (especially multilingual) is a major bottleneck, with much data locked in global tech platforms or siloed within government. R&D spending is low compared to global leaders, and there's a disconnect between research output and patenting. The paper recommends augmenting the AI talent pool (leveraging global tech companies), building "digital public data" (unlocking government datasets, scaling data initiatives), and a public-private push for greater AI R&D spending. While the reports' recommendation to create digital public data is directly transferable and essential, other solutions like leveraging global tech companies are less applicable, as Bangladesh lacks India's large-scale presence of global tech and R&D centers.

2. **Examining AI in Low and Middle-Income Countries** (Okolo, 2024).
   Type: Policy Report.
   This report analyzes AI adoption in Low and Middle-Income Countries (LMICs), highlighting the AI divide driven by disparities in technological infrastructure (electricity, internet, GPUs), skilled talent (weak education systems, brain drain), and robust policy frameworks. It documents emerging AI use cases in LMICs, including agriculture (disease diagnosis in Tanzania, pest monitoring in Uganda) and healthcare

(ultrasounds in Kenya, telemedicine in Brazil). The report offers recommendations for LMIC governments: advance infrastructure investments (especially in rural areas), build capacity for AI development and governance (upskilling policymakers, curricula development), advocate for responsible AI adoption (ethical procurement, limiting AI in sensitive domains like surveillance), and foster international collaboration to enhance governance capacity. The policy report successfully outlines use cases in agriculture and healthcare which are sector-specific and often small-scale, but they do not fully capture the immense complexity of implementing AI in a core government function like public finance management, which involves legacy systems and bureaucratic inertia. The report provides a list of what should be done but lacks information on how to implement them.

3. **The Use of Artificial Intelligence (AI) in Internal Supervision to Reduce Fraud in the Public Procurement System in Indonesia** (Amiruddin, Syamsuddin , Muntu, Helda, & Rahadi, 2024)**.**

   Type: Literature Review.

   This article provides a thorough review on the use of AI in internal control, with an emphasis on Indonesian public procurement fraud prevention. It recognizes AI's enormous potential to increase the precision and effectiveness of identifying intricate fraud patterns, a serious problem in many developing nations. However, the study also identifies substantial barriers to AI implementation in the Indonesian context. This review of Indonesia offers a highly relevant parallel for Bangladesh, as it highlights identical barriers like cost, infrastructure, and human resource readiness. Its conclusion, advocating a cautious approach, provides strong, contextually similar evidence supporting our policy recommendation for a pilot-based strategy. However, as a literature review, the paper identifies known challenges without the benefit of primary empirical data on the bureaucratic hurdles of an actual implementation.

4. **AI Readiness and Trust in Government: The Context of Bangladesh and India** (Islam, Siddika, & Shaulin, 2025)**.**

   Type: Book Chapter/Comparative Study.

   This comparative chapter on AI readiness in Bangladesh and India reveals that India possesses a significant structural advantage from its mature IT industry, leaving Bangladesh in an earlier, more constrained development phase. The analysis points to

limited institutional trust in Bangladeshi government agencies, framing this not as a simple background factor but as the primary obstacle to any AI initiative that relies on public data. This underlying mistrust likely fuels the ambiguous public perception of AI in the country. While Bangladesh's improvement on the Government AI Readiness Index to 82nd is a positive step, the ranking starkly highlights the persistent and wide capability gap with its key regional peer, India, at 40th.

5. **We know what we are doing": the politics and trends in artificial intelligence policies in Africa** (Kwarkye, 2025)**.**

   Type: Comparative Policy Analysis/Journal Article.

   This comparative analysis of AI policies in Ghana and Rwanda highlights a key strategic choice for developing nations. Rwanda's strategy is centered on protecting data sovereignty and building local capacity, an ambitious state-led model that may only be feasible within its unique, highly centralized political context, making it a difficult template for a more pluralistic system like Bangladesh. In contrast, Ghana embraces a broader AI vision across all industries, though its greater reliance on existing regulations and global norms risks leading to fragmented adoption with limited systemic impact. While both countries view AI as a way to leapfrog developmental hurdles, the analysis ultimately presents the core policy dilemma for Bangladesh: choosing between a focused, state-driven but politically demanding model and a more flexible but potentially less effective approach.

6. **AI to modernize tax administration – the story behind Armenia's success** (Farooq & Vatyan, AI to modernize tax administration: the story behind Armenia's success, 2025)**.**

   Type: Blog Post/Case Study.

   This World Bank blog on Armenia's AI pilot for tax compliance offers a highly replicable model for Bangladesh, directly validating a pilot-based approach. Its success was not derived from technology alone but from key strategic choices, demonstrating that a well-governed project can overcome typical developing country's constraints. Crucially, the initiative was driven by strong leadership from the State Revenue Committee, which prioritized solving practical business problems like invoice reading and fraud detection over simply adopting trendy technology. To navigate its domestic talent shortage, the project forged a vital partnership with the American University of Armenia, a strategy

that Bangladesh's own National Board of Revenue (NBR) could emulate with local universities. With an estimated 10 to 15 percent potential increase in tax compliance, the case makes a powerful argument for the value of this kind of focused, collaborative, and problem-oriented pilot project.

1.3 Governance, Ethics, and Regulatory Landscape for AI in Public Finance

The elements of creating a governance structure with moral standards and legal guidelines for the application of AI in public financial management are covered in this section. It contains resources that address national AI strategies, the creation of ethical standards with an emphasis on accountability, transparency, and fairness, the creation of thorough data governance policies, data privacy and security considerations, and the inherent difficulties in regulating a complex and quickly changing technology. International norms, comparative regulatory strategies, and particular country initiatives to build reliable AI ecosystems are consulted for insights.

1. **Understanding Artificial Intelligence in Tax and Customs Administration** (Aslett, Hamilton, Gonzalez, Hadwick, & Hardy, 2024)**.**
   Type: Technical Note/Policy Guidance.
   This IMF technical note provides senior officials with a high-level overview of AI in tax and customs, tracing its evolution from early expert systems to current Gen AI applications. It highlights established use cases like risk management and audit selection, but its value for Bangladesh lies more in its critical focus on legal and ethical challenges. The paper correctly identifies bias, transparency, and data privacy as key risks, but its recommendations can appear abstract from a developing country perspective. Proposing ten complex management practices, like implementing a formal AI policy and ensuring human in the loop supervision, presumes an institutional capacity for governance and oversight that is not yet present. For Bangladesh, the note is less a direct roadmap and more a checklist of the immense foundational governance work that must be accomplished before these advanced tools can be safely and effectively deployed.

2. **AI in finance: Balancing innovation and stability** (Nassr, 2025)**.**
   Type: Online Article/Policy Analysis.
   This OECD article discusses the transformative role of AI in financial markets. It notes benefits in risk modeling, trading, and fraud detection. The analysis shows that most

jurisdictions regulate AI through existing technology-neutral laws. This approach is feasible in countries with strong existing regulations. For Bangladesh, whose legal frameworks are less developed, relying on tech-neutral laws could leave significant gaps. The article highlights that some countries have introduced AI-specific policies. This path seems more relevant for Bangladesh, where building trust requires clear, proactive rules. International cooperation is correctly cited as essential. However, for Bangladesh, this also carries the risk of having to adopt international standards that may not fit the local context. The OECD found that many jurisdictions are not planning immediate regulations. This wait-and-see approach is a luxury Bangladesh cannot afford given the need to build foundational public trust.

3. **Governing with Artificial Intelligence: Are Governments Ready?** (Santiso & Ubaldi, 2024)**.**

   Type: Policy Paper.

   This OECD policy paper assesses AI opportunities in the public sector. It highlights potential benefits like increased productivity and improved public service responsiveness. The paper also points to major risks including data privacy concerns and the lack of transparency, which is often called the black box problem. It correctly identifies bias and fairness as key challenges that can lead to discriminatory outcomes in welfare or law enforcement. The report suggests creating strategic AI frameworks and putting strong regulatory standards in place. These recommendations, while sound, represent an immense governance challenge for a country like Bangladesh. The paper effectively describes a desirable end state for AI governance. Yet it provides less guidance on how a nation with a low institutional starting point should begin this complex journey.

4. **REI Systems. (2024, May 21).** (REI Systems, 2024)

   Type: White Paper (Industry Article/Expert Opinion).

   This article discusses how AI is transforming government operations through work automation and increased productivity. It emphasizes that responsible AI adoption needs solid ethical underpinnings. These include fairness to avoid prejudice and transparency about data sources and algorithms. The paper also mentions privacy and accountability as key ethical principles. Its suggested roadmap for ethical AI includes creating an independent ethics advisory board and strong data governance frameworks. This

roadmap, while a good model, is presented from a high-capacity industry viewpoint. For a nation like Bangladesh, implementing these steps is a massive institutional challenge, not a simple project. Establishing an independent ethics board or GDPR level data governance requires a regulatory maturity and resource base that is not yet in place, making the roadmap an aspiration rather than an immediate plan.

1.4 AI for Public Finance Modernization in Bangladesh: Context, Readiness, and Challenges

This section provides information specifically pertaining to Bangladesh, providing a basic understanding of the local landscape for AI adoption in public financial management. It covers the current state of Bangladesh's AI initiatives and policies, ongoing PFM reforms (such as the Integrated Budget and Accounting System - iBAS++ and electronic Government Procurement - e-GP), the overarching national digital transformation agendas (Digital Bangladesh) and the significant implications of the country's impending LDC graduation. It also critically examines the unique challenges Bangladesh faces concerning digital and data infrastructure, human capital development for AI, institutional capacity for implementing and governing AI, and the prevailing socio-political and economic environment.

1. **Bangladesh After Hasina: Political Upheaval, Shifting Alliances, and the Road Ahead** (Dawar & Dutta, 2025)**.**

   Type: Think Tank Analysis/Policy Brief.

   This brief analyzes Bangladesh's current political and economic situation. It correctly identifies entrenched corruption as the central challenge, citing the massive figure of 240 billion US dollars in illicit outflows. This number is not just a historical problem; it is a direct justification for implementing advanced AI-driven systems capable of detecting and deterring such large-scale financial mismanagement. The analysis notes the interim government is implementing economic reforms amid challenges like high foreign debt. These economic pressures make the efficiency gains from AI a matter of fiscal necessity, not just a technological upgrade. The brief points to shifting international alliances, a factor that increases the strategic importance of improving governance to attract and maintain trust, including old and new partners. Ultimately, the emergence of a new political party focused on anti-corruption and social justice signals a growing domestic appetite for transparency. This creates a political opening for the proposed AI reforms, aligning them with an active, on-the-ground demand for better governance.

2. **Bangladesh e-GP: Data Analytics on Electronic Government Procurement (e-GP) System** (Bhuiyan, Rahman, & Uddin, 2020)**.**

   Type: Government Strategic Action Plan.

   The objectives of Bangladesh's PFM Reform Action Plan for 2024–2028 are as follows:

i. Preserve fiscal restraint for macroeconomic stability and pro-poor growth.
ii. Match resource distribution with national priorities.
iii. Encourage effective resource use and service delivery through improved budget execution.
iv. Increase accountability through budget transparency and external scrutiny; and
v. Create an environment that supports better PFM results.

   To achieve these goals, the plan lists several technical strategies. It involves improving macroeconomic forecasting models and increasing domestic resource mobilization through tax automation. They do not fully address why these same institutions have historically lacked the power to ensure accountability. The plan aims to strengthen oversight bodies and enhance digital platforms, yet it does not explain how this will be different from past efforts that failed to prevent widespread financial mismanagement.

3. **Impact Assessment and Coping Strategies of Graduation from LDC Status for Bangladesh** (General Economics Division (GED), 2020)**.**

   Type: Government Impact Assessment Report.

   This government report assesses the impacts of Bangladesh's LDC graduation. It correctly identifies the key challenges ahead. These include the erosion of preferential market access, which could cost billions in apparel exports. The country also faces the loss of special WTO provisions and a likely decline in foreign aid. The proposed coping strategies emphasize strengthening public finance. The goal to nearly double the tax-to-GDP ratio to 15% by FY31 is central to this. This target, however, appears highly ambitious given that decades of previous reform efforts have resulted in only slow, incremental growth. The report also suggests trade policy reforms and addressing competitiveness issues like infrastructure and logistics. Finally, it recommends adapting to the Fourth Industrial Revolution through a technology strategy and skills development. This is a necessary goal. Yet it is presented as a straightforward policy choice, understating the immense, long-term challenge of building an entire innovative ecosystem from a low base.

4. **National Strategy for Artificial Intelligence – Bangladesh** (Information and Communication Technology Division, 2020).

   Type: National Strategy Document.

   This document summarizes Bangladesh's National AI Strategy which was launched in 2020. It was a plan to build a **sustainable AI ecosystem**. The main goal is to integrate artificial intelligence into important sectors like **finance, industry, and governance**. To achieve this, the strategy is based on six key principles:

   i. Focusing on research and development.
   ii. Skilling and reskilling the workforce.
   iii. Building strong data and digital infrastructure.
   iv. Ensuring ethics, data privacy, security, and regulations.
   v. Providing funding for AI start-ups and
   vi. Promoting the industrialization of AI technologies.

   These principles represent a comprehensive and well-structured vision. The primary challenge, however, is the significant gap between this ambitious strategy on paper and the country's actual capacity for implementation. Since its publication in 2020, progress on these pillars has been slow. This suggests that while strategic thinking is present, the financial commitment, political will, and institutional coordination required to turn these goals into reality have so far been insufficient.

5. **Bangladesh: Artificial Intelligence Readiness Assessment Report** (UNESCO, 2025)**.**

   Type: Draft Government Assessment Report.

   This UNESCO draft report assesses Bangladesh's AI readiness. Its findings show that the National AI Policy is still pending after the recent change in government. The report's recommendations include finalizing this policy with a focus on transparency and non-discrimination. It also suggests developing comprehensive AI procurement policies and updating the Right to Information Act. These recommendations, while technically sound, represent a significant governance challenge. The issue is not the absence of a plan, as a national strategy has existed since 2020, but the persistent gap between strategy and execution. The report also calls for specialized institutions like a central Office of AI and an independent Data Protection Authority. Creating new bodies is a slow process, and there is a risk they could lack the authority or funding to be effective. Finally, the report notes the Data Protection Act of 2023 needs clearer data sharing provisions. This

understates the problem. The draft law has faced criticism for potentially enabling state surveillance rather than protecting citizen privacy, a conflict that must be resolved to build the public trust necessary for any AI system.

6. **Electronic public service delivery: progress and challenges in Bangladesh** (Huque & Ferdous, 2024)**.**

   Type: Academic Journal Article (Review/Analysis).

   This paper examines electronic public service delivery in Bangladesh. It finds that e-service delivery has not been as effective as planned. The analysis points to several main obstacles. These include ineffective communication channels and a lack of human and financial resources at the local level. It also identifies a highly centralized administrative structure and a lack of sustained political will as primarily causes of failure. It shows that the key barriers to digital governance are not technological but are deeply rooted in bureaucratic inertia and corruption. The findings present a strong counterargument to the idea that simply introducing a more advanced technology like AI can solve problems that simpler e-services could not overcome due to these same unresolved institutional weaknesses.

7. **PFM Reform: Introduction of new Budget and Accounting Classification System (BACS) in Bangladesh** (Khan, 2019)**.**

   Type: Research Paper/Evaluation.

   This paper evaluates Bangladesh's new 56-digit Budget and Accounting Classification System, BACS, implemented in 2018 with the upgraded iBAS++. It replaced an older system that had clear limitations in generating analytical information. The new BACS is designed to be comprehensive, support modern international accounting standards, and enable better program budgeting. The analysis shows a critical gap, however, between the system's advanced design and its actual use. The full benefits are not yet realized because report templates are still unfinalized. This creates difficulties in generating central appropriation accounts, sometimes forcing officials into manual compilation. The system, while technically superior, is therefore hampered by institutional and procedural bottlenecks. This prevents it from moving beyond a sophisticated accounting ledger to become the powerful analytical and governance tool it was designed to be.

8. **Legal Framework of Artificial Intelligence in Bangladesh & Artificial Intelligence in Bangladesh** (OLD BAILEY, 2025)**.**

   Type: Legal Firm Articles/Analyses.

   These legal articles review the AI legal framework in Bangladesh, noting the country currently lacks specific AI legislation. Some regulatory foundations are provided by a patchwork of existing laws, including the Penal Code 1860, ICT Act 2006, Right to Information Act 2009, Cyber Security Act 2023, Copyright Act 2023, and the Consumer Rights Protection Act 2009. This approach of relying on older, non-specific laws is a significant weakness, as these acts were not designed to address the unique challenges of AI like algorithmic bias. The analysis points to the National AI Strategy 2020 and the Draft National AI Policy 2024 as the intended way forward. However, the slow progress in finalizing these policies highlights a critical gap between ambition and implementation. The reliance on existing laws, some of which like the Cyber Security Act 2023 have faced criticism for being repressive, creates a fragile and inadequate foundation for governing a powerful new technology.

9. **Designing National Policies for AI** (United Nations, 2025).

   Type: UN Report Chapter/Policy Analysis.

   This UN report chapter urges developing countries to proactively design national AI strategies aligned with their development goals. It correctly finds a significant disparity, noting that by the end of 2023, two-thirds of developed countries had AI strategies, versus only six from LDCs. This highlights the risk of LDCs like Bangladesh falling further behind. The report states effective strategies require coordination across industry, education, and infrastructure. For Bangladesh, this is not just a recommendation but the central, unresolved governance challenge, given its traditionally siloed ministries. The report's key leverage points are infrastructure, data, and skills. These are not merely leverage points for Bangladesh but are in fact the three most critical existing deficits that must be addressed before any strategy can succeed. The call for a revival of industrial policy to support new technology, while logical, is a very high-level suggestion that lacks the specific, sequenced actions a country like Bangladesh needs to begin its journey.

10. **Viet Nam Accelerates AI Adoption in the Public Sector with Strategic Policy Recommendations** (UNDP Viet Nam, 2025)**.**

    Type: UN Agency News Article/Seminar Report.

    This UNDP article on AI adoption in Viet Nam details challenges that directly mirror those in Bangladesh. Key problems include limited data sharing between government agencies, which points to a deep issue of bureaucratic silos, not just a technical gap. The public sector's insufficient computing infrastructure and heavy reliance on private sector experts for AI human resources highlight a critical capacity deficit, creating long term dependency risks. The recommendations to build clear legal frameworks, encourage private public partnerships, and promote open data are standard but do not fully address the difficulty of implementing such reforms in a low-capacity state. The paper advised adopting AI cautiously and in a practical way. The most valuable lesson here is to align AI with real needs. It strongly supports a targeted, problem-solving approach rather than a purely technology-driven one.

11. **Bangladesh's path forward: Leveraging evidence-based policy for a stable democratic transition** (Matin, 2025)**.**

    Type: Think Tank Interview Summary/Policy Commentary.

    This summary of Dr. Imran Matin's interview provides the direct political and economic justification for AI-driven PFM reform. The analysis correctly identifies that the recent political upheaval was rooted in clear economic grievances and financial mismanagement. This finding reframes the adoption of AI from a technical upgrade into a direct response to the core issues that fueled the political transition. The note that economic confidence is declining underscores the urgency for the interim government to demonstrate tangible progress on governance. The proposed independent white paper on the economy, in which BIGD is involved, offers a strategic entry point to introduce and advocate for these AI-based reforms. The plan for a new productive Safety Net Program also presents a perfect opportunity to pilot AI for better targeting and delivery, addressing a key economic challenge while building public trust in new systems.

1.5 Strategic Pathways and Policy Recommendations for AI in Bangladesh's Public Finance Management (PFM)

This concluding section gives attention to global experiences and an understanding of Bangladesh's specific context to propose actionable strategic pathways and policy recommendations. The goal is to outline how Bangladesh may modernize its public finance management systems by using artificial intelligence in a practical and efficient manner. To achieve lasting and fair effects, this entails not just finding prospective AI applications but also addressing the governance frameworks, enabling conditions, and capacity building activities that are necessary.

1. **AI Will Transform the Global Economy. Let's Make Sure It Benefits Humanity** (Georgieva, 2024)**.**

   Type: Blog Post/Expert Opinion

   This IMF blog post by Kristalina Georgieva highlights AI's transformative potential but also warns it may deepen inequality. It finds that nearly 40% of the global employment is exposed to AI. Advanced economies face greater immediate risks with 60 percent of jobs impacted, yet they also have more opportunities to benefit. The report notes that developing economies have lower immediate exposure at 26 percent. This lower figure, however, is not a sign of safety but rather an indicator of a pre-existing digital divide and a lack of the high-skilled jobs that AI is set to transform. The analysis correctly states that these countries risk worsening inequality because they lack the necessary infrastructure and skilled workforces. For Bangladesh, this is the central challenge. The IMF's own AI Preparedness Index shows that wealthier economies are far better prepared. The article's call for proactive policies like social safety nets and retraining programs, while necessary, represents a monumental task for Bangladesh, where such systems are already under-resourced and would need to be built, not just expanded.

2. **Racing toward the future: artificial intelligence in Southeast Asia** (Kearney, 2020)**.**

   Type: Consultancy Report/Industry Analysis.

   This Kearney and EDBI report assess AI readiness in Southeast Asia, a region generally more advanced in adoption than Bangladesh. It notes that while AI use is growing, the region still faces challenges. The report argues that the AI talent gap concern is overemphasized and can be mitigated by using easy to deploy models. This perspective,

however, seems overly optimistic for Bangladesh's public sector, where the core challenge is not just deploying models but building the foundational skills to govern them. The analysis identifies a fragmented AI ecosystem and evolving data governance as further hurdles. These are problems that are even more acute in the Bangladeshi context. The report estimates AI could add one trillion dollars to Southeast Asia's GDP by 2030. This figure highlights the technology's potential but is not a direct forecast for Bangladesh, which must first overcome deeper, country-specific readiness gaps not fully addressed in this business focused regional analysis.

3. **The Adoption of Artificial Intelligence in Firms** (OECD, 2025)**.**
   Type: OECD Report (Empirical Survey & Policy Analysis).
   This OECD report examines AI adoption in enterprises in G7 countries and Brazil, a context very different from Bangladesh's public sector. It finds that a scarcity of specialized skills hinders AI uptake. This finding, while true for Bangladesh, understates the scale of the problem, which is a foundational human capital deficit, not just a talent shortage. The report shows businesses desire better quality public data and simplified access. For Bangladesh, this highlights a core challenge, as public data is often not just of poor quality but also siloed and inaccessible, making it unusable for training AI models. The paper also stresses that policies developing human capital through real world projects are highly valued. Finally, it notes that collaboration with universities could be enhanced. This is a key strategy for Bangladesh, but one that must first overcome the deep, systemic gap between academic theory and the practical needs of public administration.

4. **AI in Government Services Cuts Spending, Boosts Efficiency** (Virtasant, 2025)**.**
   Type: Tech Company Article/Case Study Compilation.
   This article from tech company Virtasant highlights how AI can streamline government operations. It cites Brazil leveraging AI to reduce waste management costs by 45.4 percent by optimizing collection routes. This example, while compelling, relies on high quality historical data and traffic analysis, a significant precondition not readily available in Bangladesh. The article also mentions Estonia's virtual assistant, "Kratt," which automates citizen support for services like tax inquiries. This is another case where the success is built upon a pre-existing, deeply integrated digital governance infrastructure that is not present in Bangladesh. Finally, the piece points to the US using PredPol AI

for predictive policing, claiming it reduced crime by 7.4 percent. This is a highly misleading example. Predictive policing systems like PredPol have been widely criticized for amplifying existing racial biases, leading to the over-policing of minority communities, and their effectiveness is heavily disputed. The Los Angeles Police Department itself discontinued the program after finding it was not effective, a critical fact the article omits.

Conclusion

AI's potential to transform the public finance sector is being studied globally. High-income countries excel in automated taxation and predictive budgeting. Bangladesh and other middle- and low-income countries can make progress in the areas of effective service delivery, fraud prevention, and transparency. Strong data governance, ethics, institutional capability, a trained workforce, and political will are all necessary for the successful adoption of AI. These factors shape varied outcomes.

Global and national insights guide the research proposal on AI-driven governance in Bangladesh's public finance. Case studies, policy analyses, and theories identify transferable lessons, pitfalls, and readiness. Considering Bangladesh's LDC graduation, PFM reforms, and socio-political context, the research will offer tailored, sustainable recommendations. This aims to modernize public finance for efficiency, accountability, and inclusive growth.

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