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Explaining Divergent Artificial Intelligence Readiness in South Asia: A Comparative Study of India and Bangladesh

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Abstract

Despite a shared colonial past, geographic proximity, and similar form of democratic government, Bangladesh has consistently scored lower than India in the Government AI Readiness Index (GARI). This research attempts to answer why structurally similar countries differ in their readiness for AI. This study combines Most Similar Systems Design with qualitative policy analysis to help identify the roots of this gap at the level of indicators as defined in the GARI 2025 pillars. Bangladesh significantly lags behind India in terms of computing power, data quality, maturity of AI industry, and safety and security. The study incorporates the historical institutionalism, the state capacity model, the innovation systems theory and proposes that the differences can be attributed to institutional capacity, policy coherence, technological ecosystems and human capital development. These are emerging as the key enablers of India's edge early policy implementation, strong public-private partnerships and a strong and established innovation ecosystem. The study recommends Bangladesh to emphasize on strategic coordination, human capital investment and governance reform. This study has been conducted within a framework of causal theory, comparison of India and Bangladesh, and adds to the existing literature on AI governance in the Global South.

Keywords: *Artificial Intelligence, AI Readiness, Governance, Bangladesh, India.*

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1. INTRODUCTION

The world is witnessing a rapid growth of Artificial Intelligence (AI) technologies in the governmental, economic, and social realms. In turn, AI readiness has received significant focus in the field of comparative public policy. Governments globally are being evaluated not solely on traditional development metrics, but also on their capacity to utilize AI for the public benefit to improve service delivery, stimulate economic transformation, and establish more resilient institutions. The Government AI Readiness Index (GARI), released annually by Oxford Insights, is a measure of national and regional AI readiness, measuring the readiness of 195 countries on the following six analytical pillars: Policy Capacity, Governance, AI Infrastructure, Public Sector Adoption, Development and Diffusion, and Resilience (Oxford Insights, 2026).

The 2025 edition of the GARI provides a particularly interesting and important insight: While sharing a colonial past, democracy, and geographical location, there is a huge difference between the two South Asian neighbours, India and Bangladesh, in terms of AI readiness. The overall gap between India and Bangladesh is 18.18 percentage points with India scoring 66.55 (27th) and Bangladesh scoring 48.37 (75th). This divide is evident in most pillars of analysis and particularly pronounced in the areas of Development and Diffusion (India: 54.85; Bangladesh: 26.97), Resilience (India: 59.46; Bangladesh: 29.64) and Policy Capacity (India: 96.00; Bangladesh: 69.00). However, Bangladesh is doing better than India for Public Sector Adoption (Bangladesh: 82.78; India: 79.07) and is almost identical in Governance scores (India: 64.03; Bangladesh: 63.93).

The central research question of this study is an empirical puzzle: what accounts for differences in AI readiness across structurally similar countries? This question is of both theoretical and practical values. It theoretically defies the simplistic structuralist explanations based on geography, colonial history or institutional forms as determining technological governance capacity. In reality, it gives practical recommendations on adopting AI in Bangladesh and other developing nations looking to accelerate their AI journey.

To answer the question, the study employs the Most Similar Systems Design (MSSD) method; a comparative design which focuses explanatory efforts on the variables that differ, while holding constant the variables that are shared (colonial history, geographical proximity, democratic structure, and developing economy status). This paper constructs a causal argument of the India–Bangladesh readiness divides in AI through three interrelated theoretical frameworks and data from the GARI 2025 pillars.

A central proposition discussed herein is that the preparation of AI among India and Bangladesh is not comparable due to structural similarity or dissimilarity but due to the innovation ecosystem development, infrastructure capacity and policy commitment. More specifically, the early policy adoption in India resulted in path-dependent advantages that blossomed into a strong national innovation system, while the policy path taken in Bangladesh has been relatively slow and narrow, focusing on the digitization aspect, and left its AI ecosystem underdeveloped, its infrastructure constrained, and its human capital pipeline insufficient for the demands of the AI era.

This paper is organized as follows: In section 2, the relevant literature pertaining to AI governance, comparative technology policies and the digital development in the South Asian region is also summarized. Section 3 elaborates on the theoretical framework. The conceptual framework is presented in Section 4, along with the causal model. The methodology proposed is described in Section 5. Section 6 contains the research results. Section 7 discusses the causal explanation and combines the theoretical frameworks and the empirical results. The policy recommendations for Bangladesh are provided in Section 8. Section 9 concludes.

2. LITERATURE REVIEW

Since 2017, when the first national AI strategy appeared, the amount of scholarly work on this topic has increased significantly. Cross-national analyses of national AI strategies have identified considerable variation in their policy priorities, institutional arrangements, funding commitments, and approaches to AI development. Comparative studies also show that many early strategies emphasized research capacity, talent development, industry development, data infrastructure, and international cooperation (Galindo et al., 2021; Radu, 2021).This finding is directly applicable to the comparison between India and Bangladesh, since India introduced its National AI Strategy in 2018 under the aegis of NITI Aayog, while the AI governance framework in Bangladesh has developed over a longer period of time in the broader context of its Digital Bangladesh initiative. Cihon et al. (2020) analyzed how AI governance is organized into different forms of governance, namely formal regulatory instruments, soft governance instruments, and public-private coordination mechanisms. Their findings show that states with a more mature institutional capacity, defined as the existence of clear agency mandates, inter-ministerial coordination and interaction with the private sector, generate more coherent and effective AI governance. This institutional aspect is extremely critical in the understanding of why the governance capacity of AI is at a higher level in India as compared to Bangladesh even though the two countries have the same formal democratic system.

In the South literature, Naudé (2021) questions the optimism of techno-optimists regarding the potential for the development of AI, explaining that structural factors, including infrastructure gaps, a shortage of skilled people and weak innovation systems, are significant obstacles for developing countries to benefit from AI. Cobbe et al. (2021) further show that these advantages are not inherent with AI adoption, and rely on previous institutional investments, market development and regulatory capacity to be realized. These findings corroborate the paper's argument that Bangladesh's structural challenges within the innovation ecosystem and AI infrastructure are responsible for the country's readiness gap in AI. This literature on South Asian digital governance is of significance. The digital ecosystem in India, replete with the Silicon Valley analogue in Bangalore, and sustained by decades of IT export policy, actually fosters a unique national innovation system for the development of AI, Arora (2019) has documented. India's Aadhaar system provided a foundational digital identity infrastructure that subsequently became an important component of India Stack and the country's broader Digital Public Infrastructure, supporting the delivery of digital public and private services at population scale (Alonso et al., 2023). Building on this digital infrastructure, India has increasingly integrated artificial intelligence into public-sector applications, using AI and data-driven technologies to enhance the efficiency, accessibility, and responsiveness of government services.

However, Makhdum (2024) discussed the success of the Digital Bangladesh program in providing e-government services and mobile connectivity to the people of Bangladesh, while also highlighting the structural shortcomings in the production of advanced technology and the capacity of the private sector in this area. The study is designed in a way that is inspired by methodological literature on comparative politics. The study follows Anckar (2008) and thus chooses cases that have similar background conditions but differ on the outcome to limit the number of possible explanations for the observed difference. Beach and Pedersen (2013) recently developed process-tracing as an additional technique for finding causal mechanisms and extended it beyond the correlational paradigm to specify the causal links between variables and outcomes. Both methods are used in this study: MSSD used to identify cases and causal variables for the study, and process-tracing logic used to develop causal mechanisms of how the policy is adopted to what it results in in terms of AI readiness. Notwithstanding this body of literature, little research can be found with a causal-comparative approach that is theory-driven and compares AI readiness divergence between countries in the Global South, which share similar levels of development. Most comparative AI governance studies either rely on developed economies (OCDE) or offer descriptive (but not causal) rankings. This study makes a contribution to address this gap by undertaking

a theoretically informed and causally guided comparison of India and Bangladesh with GARI 2025 as a prism through which the comparison was made.

3. THEORETICAL OVERVIEW

Based on three complementary theories (historical institutionalism, state capacity theory, and innovation systems theory), this study is grounded in a multilevel perspective to provide a causal explanation for the emergence of the divergence of AI readiness. These frameworks are not used in competition, but they are nested and mutually reinforcing lenses; they are used at varying levels of abstraction, and in varying places in the causal chain.

3.1 Historical Institutionalism and Path Dependency

Historical institutionalism, as it was elaborated by Thelen (1999), Pierson (2000), and Mahoney (2001), suggests that institutions develop in a path-dependent fashion, where initial decisions set up self-reinforcing feedback that limit future options. In the case of technology policy, the idea of increasing returns is especially important because countries which invest early in routines, human capital (HC) stocks, and institutional networks in technology education, research infrastructure, and regulatory capacity have a hard time catching up on high-quality technology routines, HC stocks, and networks.

One of the implications of historical institutionalism would be that there is an empirical expectation that countries that had invested in IT education, software export policy, and investment in digital infrastructure in the past would have an advantage with regard to readiness for AI that was not just proportional to the resources they had just acquired, but rather compounded returns on the investments they had already made in the past. It is at the point of the Information Technology Act, 2000, software technology parks and the continued growth of the Indian Institutes of Technology (IIT) system where India has diverged from the trajectory of Bangladesh. The early institutional investment produced a national 'innovation inheritance' in India, through diaspora networks, VC experience and capacity of the private sector in AI, which Bangladesh's more export-manufacturing-oriented track did not bequeath.

Historical institutionalism also emphasizes critical junctures, or moments in history when path dependencies can be broken and new paths can begin. The launching of India's National AI Strategy in 2018 and the IndiaAI Mission in the following years are such moments, marking the institutionalization of AI as a national priority and the beginning of a cycle of self-sustaining investments in infrastructure, people and public-private coordination. The absence of an equivalent critical juncture, namely a dedicated resourced nationally focused AI strategy, keeps Bangladesh on its path-dependent disadvantage.

3.2 State Capacity Theory

State capacity theory emphasizes the capacity of the state to design coherent policies, to raise the necessary resources, and to coordinate among societal actors to meet policy goals, using Mann's (1984) distinction between despotic and infrastructural power and Evan's (1995) theory of embedded autonomy. A high-capacity state doesn't just provide directives; it establishes bureaucratic institutions that have the necessary skills, it develops institutional feedback between the state and society, and it implements those things over time.

This study operationalizes state capacity along three indicators drawn from Mann (1984) and Evans (1995): cognitive capacity, coordinative capacity, and fiscal-administrative capacity. Cognitive capacity refers to the ability to grasp and predict governance issues arising from AI; coordinative capacity is the capacity to bring together government ministries and agencies as well as private actors in a coordinated way around an AI agenda; fiscal and administrative capacity is the capacity to turn policy into funded and implemented programs. India's NITI Aayog-based AI governance framework, backed by a specific secretariat of the IndiaAI Mission and the government's allocation of roughly US$1.3 billion for AI

infrastructure over five years is a clear example of its high level of AI-relevant capacity. Bangladesh has a high overall capacity to manage the IT sector (as demonstrated by Digital Bangladesh) but has not built the same level of institutional capacity to govern AI sector (as evident in the lower Policy Capacity score, 69.00 against 96.00 in India).

A capable state can also serve as a catalyst to support the development of AI innovation ecosystems by leveraging its procurement, regulatory, funding, and convening authority to encourage private sector investment in AI and academic research partnerships, as state capacity theory also helps explain this link. This is where India's state capacity comes in to make a developmental difference that cannot be replicated in Bangladesh through its limited institutional framework for AI.

3.3 Innovation Systems Theory

Freeman (1987), Lundvall (1992), and Nelson (1993) have developed a theory of innovation systems that sees national innovations as a systemic process involving the interactions between firms, universities, research institutions, government, and financial intermediaries. The involvement of these actors in dense linkages, the presence of strong mechanisms for knowledge transfer, the existence of an entrepreneurial culture, the availability of risk capital and absorptive capacity to integrate and adapt technologies from the outside, are all characteristics of mature national innovation systems.

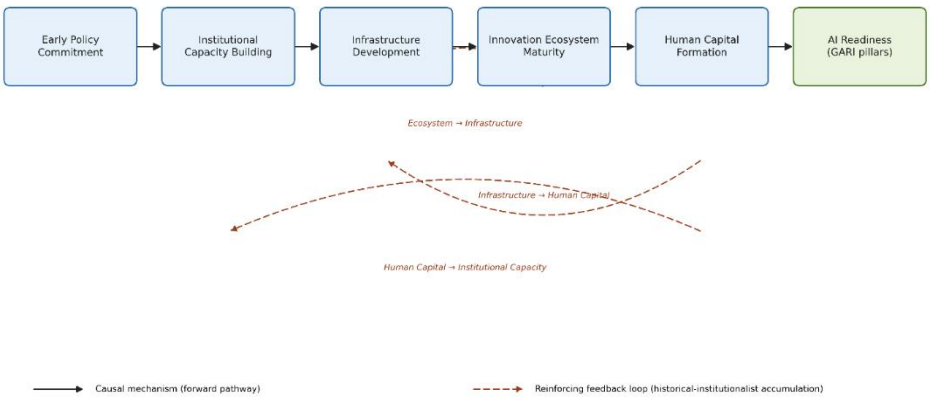
The innovation systems theory suggests that countries with stronger AI innovation systems are likely to be more prepared for AI since the diffusion and development of AI is an ecosystem-dependent process. The Bangalore-Hyderabad-Mumbai technology corridor in India is a well-established subnational innovation system with international linkages, akin to that of Western countries. The innovation ecosystem in Bangladesh shows positive growth with innovation in software exports and mobile financial services but is still relatively weak because of the dominance of the readymade garment (RMG) sector and less technological development of private sector firms in the country that can develop or deploy AI.

The innovation systems theory is an excellent way to operationalize the variable that is most directly measured by the Development and Diffusion pillar of the GARI: AI sector maturity, human capital, and technology diffusion. Hence, the difference in this pillar (India 54.85 and Bangladesh 26.97) is the highest single-pillar difference in the comparison, which provides the strongest single-pillar empirical support for the innovation-systems mechanism within the broader causal chain.

4. CONCEPTUAL FRAMEWORK AND CAUSAL MODEL

Taking the three theoretical frameworks mentioned, this section proposes the conceptual model of this study as an explicit causal model that connects three stages of early policy commitment with AI readiness outcomes. The causal model presented below is a proposed, theory-derived pathway.

Figure 1: Conceptual Causal Model Linking Early Policy Commitment to AI Readiness



Source: Authors' own illustration

With a comparison of N=2 cases and a single composite index, this causal chain is best understood as a theoretically derived and plausible pathway rather than a demonstrated causal sequence in the statistical sense. Each arrow represents a hypothesized mechanism linking the upstream and downstream variable, consistent with process-tracing logic (Beach & Pedersen, 2013) rather than covariational causal inference. The policy commitment, defined as the timing, specificity and resourcing of a national AI strategy, incentivizes institutional capacity building, through organizational mandates, funding and coordination mechanisms. Institutional capacity building allows for infrastructure development with a governance framework to attract and direct public and private investments in computing capacity, data systems and connectivity. Infrastructure development fosters AI sector maturity and helps to reduce the threshold for innovation companies and research institutions. Ecosystem maturity is what opens up opportunities for human capital development through employment creation, research opportunities, and career pathways that draw and keep AI talent. Lastly, human capital and ecosystem density brings high AI-readiness results on all pillars of GARI.

The causal model also indicates the location of the feedback loops. Building more sophisticated policy capacity (Human Capital to Institutional Capacity) and taking advantage of AI readiness (Infrastructure to Human Capital) come from a mature innovation ecosystem that draws additional infrastructure investment (Ecosystem to Infrastructure) from abroad, which further boosts all variables upstream. Historical institutionalism is a major prediction that early advantages tend to accumulate over time, and these feedback loops help to account for this.

The progress of India in this causal model can be seen across several connected dimensions. Its early policy support, particularly the National AI Strategy of 2018, helped build key institutions such as the NITI Aayog AI Task Force and the IndiaAI Mission. These efforts encouraged major investments in AI infrastructure, including 38,000 GPUs and US$1.3 billion in federal funding (Oxford Insights, 2026). This investment strengthened India's AI ecosystem, with Bangalore emerging as a major tech hub alongside growing AI startups and research centers. Together, these developments have supported human capital through IIT-trained engineers, AI researchers, and returning members of the Indian diaspora. At the first level, the absence of a dedicated, resourced AI policy commitment has limited all subsequent variables, resulting in the Bangladesh score pattern with lower scores in Development and Diffusion and in AI Infrastructure and Resilience even though it has high scores in Public Sector Adoption and near-par in governance.

This framework produces a hierarchy of causal importance of the GARI pillars. Development and Diffusion and AI Infrastructure are characterized as the most causally proximal variables, variables that are most closely associated with the AI readiness outcomes. Policy Capacity is the most causal distal but

most upstream variable the initiating lever. Governance is more of a facilitating condition than a motivating factor. In fact, Public Sector Adoption, as the analysis will show, is a relatively independent dimension, which is a consequence of Bangladesh's long history of e-government and a factor that is not part of the causal chain of other pillars.

5. RESEARCH METHODOLOGY

This study is carried out using a Most Similar Systems Design (MSSD), which is built on the comparative literature on case selection from Anckar (2008) and later, refined in the comparative literature (Seawright & Gerring, 2008; Mill, 2015). MSSD chooses cases that have similar backgrounds, but different outcomes of interest. The MSSD adjusts for commonalities, giving the credit for differences to actual differences and not to similarities.

There are a number of reasons why India and Bangladesh form an extremely good MSSD couple. First, they have a history of colonial rule under British rule and have inherited similar legal, administrative and educational traditions and systems. Second, they occupy contiguous geographic territories: And of course, they have extensive cultural, linguistic, and demographic links, stemming from pre-1947 times of the Bengal presidency and the Bangladesh Liberation War in 1971. Thirdly they are both parliamentary democracies and have Westminster-style constitutional arrangements, multiparty elective systems and federal or quasi-federal administrative structures. Fourthly, both are considered developing economies, and have similar income per capita growth and large shares of economically vulnerable populations. Fifth, both are South Asian democratic states with similar regional economic and geopolitical dynamics.

These similarities in structure are so great that no difference in the level of AI readiness can be attributed to colonial history, geographic location, type of political system or regional context. That eliminates a whole range of variables that could be confounding and focusing analysis just right on the variables that do differ when and how technology policies are adopted, the evolution of innovation ecosystems, and infrastructure investments. The methodological power of the MSSD approach is that it takes a form of "natural control" with the use of "structural similarity" and that this is akin to a natural experiment.

A referee can properly inquire if the AI-readiness difference is more a reflection of India's far larger economy and population, rather than variations in policy timing. India's economy is nearly 10 times the size of Bangladesh's and its population about 8 times as large. MSSD accounts for characteristics such as colonial history, location, regime type, and developing-economy status, but it does not eradicate variations in economic or demographic scale. Therefore, this research treats scale as a possible alternative explanation rather than dismissing it. But the policy-timing argument remains significant for two reasons. First, the Governance pillar reveals a close equivalence between the two countries (6.3) although scale could potentially matter there. This implies that the discrepancies across the other pillars cannot be explained by scale alone. Second, the dispute is about the timing and funding of AI policy, which is a matter of political choices, no matter the size of a country. Hence, this study is not making the case for Bangladesh to match the amount of absolute investment in infrastructure of India. In future work, the scale explanation could be more explicitly tested using per capita or GDP-adjusted AI-readiness measurements, if available.

The major quantitative information source is the Government AI Readiness Index 2025 by Oxford Insights which assigns scores for each of the six pillars of AI Readiness at the country level: Policy Capacity, Governance, AI Infrastructure, Public Sector Adoption, Development and Diffusion, Resilience. The eighth iteration of the Index, GARI 2025, introduces a new research question framing to focus on the potential of governments to use AI for the public good, and adds 195 countries to the

Index. It features 69 indicators across 14 dimensions, under the six pillars, providing a thorough and multi-dimensional definition of AI readiness.

Qualitative data has been derived from official government policy documents such as National AI Strategy 2018 of India, and the mission of IndiaAI, ICT policy documents of Bangladesh (Digital Bangladesh Vision), as well as secondary academic literature on digital governance in South Asian countries, policy analysis on AI and innovation systems of developing economies.

The analysis was done in a three-step procedure. India and Bangladesh scores are captured for all six GARI pillars in Step 1 (Descriptive Comparison) which forms an empirical benchmark and a baseline that is used to compare with the scores captured in Steps 2-6. Gap Identification (Step 2) identifies the level of both divergence and direction of divergence in pillars and identifies primary gaps (most relevant to the causal argument), secondary gaps and cases of near equality and opposite divergence. The empirical patterns are next explained in Step 3 (Causal Mechanism Analysis) within three theoretical frameworks: upstream conditions of Policy commitment and institutional capacity; and downstream conditions of Ecosystem maturity, Infrastructure, and Ecosystem resilience.

6. RESEARCH RESULTS: A PILLAR-BY-PILLAR COMPARATIVE ANALYSIS

Table 1 presents the GARI 2025 pillar-level scores for India and Bangladesh, along with the calculated gaps for each pillar. These data constitute the empirical foundation for the subsequent causal analysis.

Table 1: GARI 2025 Pillar Scores: India vs. Bangladesh

Pillar	India	Bangladesh	Calculated Gaps
Policy Capacity	96.00	69.00	+27.00
AI Infrastructure	63.31	39.02	+24.29
Governance	64.03	63.93	+0.10
Public Sector Adoption	79.07	82.78	–3.71 (BD leads)
Development & Diffusion	54.85	26.97	+27.88
Resilience	59.46	29.64	+29.82
Overall Score (Global Rank)	66.55 (27^{th})	48.37 (75^{th})	+18.18

Source: Oxford Insights, Government AI Readiness Index 2025.

6.1 Policy Capacity: India 96.00 vs. Bangladesh 69.00 (Gap: +27.00)

The Policy Capacity pillar examines the government's capacity to produce and adopt effective AI policies, consistent with a clear national vision, with a commitment to resources and international cooperation. India's score of 96.00 is comparatively high and is in line with the government's commitment of around USD 1.3 billion for the next five years for the development of AI infrastructure, as well as the National Strategy for Artificial Intelligence launched by the NITI Aayog (2018) and the IndiaAI Mission created in 2019. By 2025, India had scaled to 38,000 GPUs (a target of 10,000 GPUs was set in the beginning) and released IndiaAI Governance Guidelines along with a Technology and Policy Expert Committee (Oxford Insights, 2026). The Global AI Summit in 2026, hosted by India, further institutionalized its policy leadership in the field of AI.

Bangladesh's score is at 69.00, which is better than the global average, but is more diffuse, since AI is a sub-segment of the broader Digital Bangladesh initiative and its own national strategy is not dedicated, has its own resources, and is independently developed. Bangladesh has taken significant steps forward with e-government policy and the appointment of Anir Chowdhury as an adviser for the AI transformation program reflects the increasing focus on governance for AI. A stand-alone, funded, national AI strategy, however, does not exist yet, and it is not clear when it will be in the process of development, or how resources will be allocated, or how it will be coordinated. This is not just a lack of policy, but rather a message to domestic and foreign investors, researchers and actors in the AI ecosystem that AI is not the top priority issue in the policy agenda, which continues disinvestment trends.

That is why the Policy capacity gap is singled out as the first factor in the casual chain. The policy commitment is not only a testament to India's readiness with AI but also a catalyst that has created a path for institutional investments, industry participation, and collaboration with the international community all contributing to the ecosystem benefits.

6.2 AI Infrastructure: India 63.31 vs. Bangladesh 39.02 (Gap: +24.29)

The AI Infrastructure pillar is the availability of the necessary computing capacity, technical infrastructure, and high-quality data. This pillar covers three key components: access to and facilities for high-performance computing (HPC), access to and facilities for computing capacity (GPUs), access to and facilities for data quality (data availability, governance and cross-border flow), and access to and facilities for enabling technical infrastructure (broadband connectivity, digital identity systems, and cloud facilities).

With 38,000 GPUs as of 2025, a developing cloud infrastructure, and a relatively mature data governance framework moving towards a comprehensive data protection regime, India's score of 63.31 is due to its significant investments in computing infrastructure (Oxford Insights, 2026). With over 1.4 billion people, India's Aadhaar digital identity system offers an unprecedented digital data substrate for AI-powered government services. The technical infrastructure in India is also highly conducive to the rollout of AI, with the expansion of 4G and 5G networks. (Tiwari et al., 2022; Rajani, 2026)

Bangladesh's score of 39.02, around 24 points lower than India, indicates that there are severe gaps in all three sub-dimensions. Limited national investment in high-performance computing and lack of national AI computing strategy limits computing capacity. However, data quality suffers due to disorganized data governance, inter-governmental data silos, and the lack of available structured Bangla data for training AI models. Though there is good progress with broadband and mobile connectivity in Bangladesh in line with the Digital Bangladesh initiative, the infrastructure required for AI (data centers, cloud computing and high-speed research networks) is still not sufficiently developed compared to India.

The infrastructure gap is causally important because AI's capabilities are infrastructure dependent. The development and deployment of AI applications would be impossible without proper computing, data, and connectivity. So, the infrastructure pillar is a major constraint in the path of AI development in Bangladesh.

6.3 Governance: India 64.03 vs. Bangladesh 63.93 (Gap: +0.10) — Near Parity

In the Governance pillar, it assesses whether there is clarity, understanding and implementation of AI governance principles, followed by data governance, and is able to comply with regulatory requirements. The nearly identical scores of India (64.03) and Bangladesh (63.93) are most analytically significant among the findings from the Pillar comparison, directly contradicting one of the popular explanations

for the difference in readiness of India and Bangladesh in using AI namely the relatively lower capacity of the Governance Institutions in Bangladesh.

This near parity illustrates that both nations are also pursuing similar AI governance regimes, with both countries working on data protection laws, and having laws that, at the very least, formally address issues of accountability, transparency, and data rights related to AI. This discovery suggests that the overall readiness gap observed is not just attributable to governance quality. Instead, governance establishes the enabling conditions for the development of AI but is not enough on its own to spur development if the ecosystem, infrastructure and human capital are not in place.

Theoretically, this is significant as it indicates that Bangladesh has the governance building blocks needed to foster development of AI. Not the quality of regulations, but ecosystem underdevelopment and infrastructure are the binding constraint. It has clear policy implications that Bangladesh does not need to prioritize governance as a pressing need as much as ecosystem and infrastructure development.

6.4 Public Sector Adoption: Bangladesh 82.78 vs. India 79.07 (Bangladesh leads by +3.71)

The Public Sector Adoption pillar assesses the digital policy of the government relating to using AI in public services, along with the capabilities of e-government. The second most analytically significant finding of the comparison is that Bangladesh's score in this pillar is higher than that of India (82.78 versus 79.07). This is a testament to Bangladesh's performance that is almost 20 points better than that of a country that is much more advanced in its overall AI readiness.

The high score of public sector adoption in Bangladesh is the outcome of implementing the Digital Bangladesh programme in 2008, which systematically introduced digital services for government, increased the number of union digital centers (providing access to ICTs to the rural population) and automated birth/death registration, as well as establishing digital courts, and creating a comprehensive e-government service portal (Hasan & Rupa, 2021). Those investments have yielded a very effective e-government delivery system; in the measurement system used by GARI, a strong form of digital government adoption.

This discovery has a number of policy and practice implications. First, it shows that Bangladesh has institutional will and bureaucratic capability for technology-assisted government service delivery which can be the basis for facilitating AI in government delivery. Second, it argues that the overall AI readiness gap in Bangladesh is not due to inabilities of the public sector to adopt technology, but due to lack of development of private sector ecosystem and infrastructure gaps for applications of AI beyond e-government. Third, it points to the key strength of Bangladesh's AI ecosystem its public sector digital preparedness and highlights the potential of an intentional effort to build on that strength as a driver of overall AI ecosystem development.

6.5 Development and Diffusion: India 54.85 vs. Bangladesh 26.97 (Gap: +27.88) — The Primary Structural Divide

Overall, the comparison reveals a shift in AI sector maturity, human capital for AI, and technology diffusion across industry, academia, and civil society as captured in the Development and Diffusion pillar. The difference (India: 54.85; Bangladesh: 26.97) shows the intrinsic distinctions in the national innovation frameworks of the two nations, which have developed over decades rather than being shaped solely by transient policy measures.

India's score of 54.85 is a sign of a mature technology ecosystem with a world-class network of Indian Institute of Technologies (IIT) and Indian Institute of Management (IIM) institutes, a large and globally connected private technology sector comprising of Infosys, Wipro, TCS and the burgeoning AI-native startup ecosystem, a substantial AI research community with presence in the international publishing record and with AI technology diffusion through its presence in the domestic businesses,

NGOs and civil society organizations and a diaspora network that channels investment, expertise and international partnerships into India. With the government's clear vision of 'IndiaAI' being a model for other developing countries and hosting the upcoming AI Summit, India's AI sector is growing more mature.

Bangladesh has a score of 26.97, trailing other South and Central Asian countries like Kazakhstan (39.85) and Pakistan (36.95) for this pillar (Oxford Insights, 2026), indicating a very different economic and institutional legacy. The development model of Bangladesh is traditionally supported by the Readymade Garment (RMG) sector that accounts for about 84% of the export earnings and employs more than 4 million people mostly engaged in labor-intensive manufacturing. Unlike IT-export based development in India, this model has yielded an innovation system spillover that has not yet been witnessed, namely, an entrepreneurial culture, risk capital, research-industry linkages, and building up of technical talent. The AI sector in Bangladesh is still in its early stages, human capital is not adequately trained for AI due to the lack of adequate STEM specialization in AI/ML curriculum, and technology diffusion within businesses and civil society is still in early stages.

This puts the Development and Diffusion pillar as the key proximate cause of the India–Bangladesh AI readiness gap, which aligns with the framework of the theory of innovation systems. The causal logic is clear: an AI readiness outcome is driven by a robust AI innovation system, characterized by AI companies, research institutes, human talent, and diffusion mechanisms. For all other dimensions of AI readiness to manifest themselves as actual capabilities, the key factor is the ecosystem.

6.6 Resilience: India 59.46 vs. Bangladesh 29.64 (Gap: +29.82) — The Downstream Consequence

The Resilience pillar evaluates the management of social, economic, and environmental issues related to AI implementation, including its safety, security, and readiness for societal change. The difference in absolute ratings between the two countries is the most significant in the analysis (India 59.46 vs Bangladesh's 29.64), reflecting differences in infrastructure for advancing AI safety and the ability to manage AI risks.

India's elevated resilience rating is due to its involvement in multiple global AI safety coalitions, the establishment of AI ethical frameworks, the growing emphasis on AI cybersecurity, and the extensive AI safety research community dedicated to overseeing and alleviating AI hazards. The lower score in Bangladesh is due to the fact that there are no dedicated institutions for addressing AI safety and, as mentioned earlier, that the immediate risks associated with AI use are lower in countries with less advanced AI ecosystems, while resilience investments are also lower due to lack of investment in the ecosystem.

Importantly, the Resilience pillar should not be interpreted as an independent driver of divergence in AI readiness, it rather is a downstream effect of gaps in ecosystems and infrastructure. Underdeveloped AI ecosystem is in part a symptom of Bangladesh for low resilience score. As the Bangladesh AI ecosystem matures, investments in resilience will be more needed and possible. This suggests that resilience is not a prerequisite to ecosystem and infrastructure development, but it should be done in parallel in Bangladesh.

7. DISCUSSION

7.1 Causal Explanation: How and Why the Divergence Occurs

The pillar-by-pillar analysis is used to set the empirical boundaries of the India–Bangladesh AI-readiness gap. This part moves from description to causal explanation by detailing the processes by which policy and institutional variations impact observed results.

The first stage of the causal chain is the time and nature of technology policy commitment. Information Technology Act, 2000 and the pro-export policies for software in India laid the institutional and regulatory groundwork for a tech-savvy private sector. This human capital and social capital led to the establishment of Bangalore's technology hub, which has resulted in a number of software engineers, entrepreneurial role models, and internationally experienced managers. India's National AI Strategy of 2018 was not a plan to start from scratch, but rather an effort to leverage three decades of technology growth which had resulted in a highly educated technologist population, globally engaged companies and a research community with the capability of tackling cutting-edge AI questions.

The ability of India to be ready for AI in 2025 is a result of a technology policy path dependency, which in historical institutionalism terms, would be the cumulative effect of the past 30 years of investment in the technology sector, and not just the last five years. This indicates the reasons for some of the simple 'catch-up' approaches being ineffective for Bangladesh; this is not only because of the current policy, but also because of the institutional infrastructure, ecosystem density and human capital stocks that have been created over decades of differential investments.

The case Bangladesh is different. The Digital Bangladesh was a very significant program in the realm of promoting e-governance, mobile connectivity and employment in the IT industry, but it was more focused on the IT services exports and the digitization of the business rather than technology production and innovation. For Bangladesh, however, the lack of a national innovation system strategy, akin to the one followed by Singapore, South Korea, or India, resulted in a lack of human capital, entrepreneurial ecosystem, and research depth to enable Bangladesh to be AI ready.

One of the most important links between AI Infrastructure and Diffusion and Development is the multiplicative impact of the availability of the infrastructure on the formation of the ecosystem. With the easy availability of compute infrastructure (GPUs, cloud platforms, high-performance computing), AI researchers can perform experiments at scale, startups can develop and test AI products, government agencies can test AI products, and universities can introduce AI into curricula, using real compute resources. Infrastructure is not only an enabler, but it also can drive ecosystem composition and density.

The effect of India's investments in infrastructure 38,000 GPUs, a maturing ecosystem of data centres, and IndiaAI compute initiative is to lower the barriers to participation in the AI ecosystem for researchers, entrepreneurs and public sector innovations. Bangladesh's AI experimentation barriers are the mirror image of the infrastructure shortage, impacting the development of the AI ecosystem, research, and the willingness of private sector companies to invest in AI.

The Development and Diffusion gap (27.88 points) and the AI Infrastructure gap (24.29 points) are very correlated because they are causally connected as infra-enabling an ecosystem. It's not only the lack of infrastructure to access compute, it's the barrier to the growth of a larger infrastructure ecosystem.

The most analytically unique part of the India-Bangladesh comparison is Bangladesh's lead in Public Sector Adoption, which presents a paradox that needs to be resolved by causal theory: How does a country with comparatively poor AI readiness beat a comparatively more AI-ready country in government digital adoption?

The first step to understanding this paradox is to understand that the GARI is a measure of the public sector's e-government service delivery capability, and the government's digital policy orientation toward AI-supported service delivery. The Digital Bangladesh initiative had yielded very good e-government infrastructure, e.g., union digital centres, mobile government services, and an e-government portal, which resulted in Bangladesh having a high Public Sector Adoption score but not necessarily a high AI Ecosystem score. That is, Bangladesh has reached a good level of digital government adoption without a parallel ecosystem of private sector AI and research capacity, that would otherwise follow or follow through on it.

This finding reveals that Public Sector Adoption and the Development and Diffusion pillar are partially decoupled in Bangladesh's case, driven by different causal processes. Public Sector Adoption in Bangladesh has been driven primarily by government mandate and donor-supported ICT infrastructure programs, while Development and Diffusion require private sector maturity, research ecosystems, and market development that government mandate alone cannot produce. This decoupling represents both a diagnostic insight explaining why Bangladesh's overall readiness lags despite its e-government success and a strategic opportunity, as Bangladesh could deliberately leverage its strong public sector digital infrastructure as a demand-side stimulus for AI ecosystem development.

With Governance scores so close to each other in both countries (India: 64.03, Bangladesh: 63.93), it is not possible to say that governance is a key determinant of the overall AI readiness gap. Theoretically significant negative finding: the difference is not explained by the Weberian quality of institutions, such as the degree of bureaucratic rationality, rule of law, or the control of corruption. The conceptual frameworks, regulatory environments and principles of governance for AI in both countries are similar. The gap is not the failure of institutions; rather, it is the failure to apply institutional capacity to the domains related to the creation of AI.

This discovery also suggests that governance reform is a good thing in itself but for Bangladesh it is not the lever to boost their AI readiness. The challenges to binding are upstream (policy commitment, ecosystem strategy) and downstream (infrastructure, human capital) from governance, and not governance itself. While the preconditions for the AI ecosystem and infrastructure are in place, the governance institutions of Bangladesh seem to have the potential to facilitate the development of AI.

7.2 Theory Integration: Explaining the Gap Through Institutional and Systemic Lenses

The causal explanations and empirical analysis presented in the previous sections can now be combined with the theoretical frameworks to give a comprehensive theoretical explanation of the divergence between the readiness of AI in India and Bangladesh.

Historical institutionalism gives us the temporal aspect of the explanation. This is not a problem caused by actions taken over the last five years; it is a consequence of the institutional trajectory that India and Bangladesh have followed over the last 30 years. The Information Technology Act, 2000, the expansion of the IIT, software export policies and the early prioritization of a National AI Strategy in India all were important moments that were path dependent for India's benefit. These initial investments take place in the form of human capital, firm characteristics, diaspora networks, and research infrastructure, and they have an increasing return effect over time, which is hard to duplicate by latecomers in a short period. Bangladesh's path dependency is another critical juncture as it has developed into an RMG-export oriented model which helped create growth and reduce poverty without establishing the prerequisites of the innovation ecosystem for AI readiness.

The institutional agency dimension is given by the state capacity theory. India's capacity to mobilize some US$1.3 billion in federal funds for investments in AI, to coordinate federal agencies (NITI Aayog, MeitY, DoST) and private sector actors, and execute a bold GPUs procurement initiative demonstrates the infrastructure power of a high-capacity developmental state. The government's ability to deliver e-government services, reflected in its Public Sector Adoption score, is notable. However, this capacity has not yet been used to the same extent to support the country's AI innovation ecosystem. India has much more depth of administrative capacity, skills in government and fiscal space for multi-year investment, enabling the execution of a national AI strategy, than does Bangladesh.

The systemic dimension is provided by Innovation systems theory. The Development and Diffusion gap, the largest and most structurally relevant gap in the comparison is most obviously attributable to differences in national innovation systems' maturity. The Bangalore-Hyderabad technology corridor in India is a regional innovation system that is globally integrated, has high-level venture capital markets,

research-entrepreneurial connections and a culture of entrepreneurial risk taking that has been established over 30 years. In Bangladesh, the software export sector is mainly focused on low-end outsourcing and less on high-value AI products development, universities' research capacities are largely weak, and they have limited linkages with industries, while the human capital pipeline for AI is only starting to develop, and the venture capital system is still in its infancy. The national innovation system framework is about the density of interactions among firms, universities, government agencies, and financial intermediaries that allows for AI development and diffusion, not just about government investment.

The combination of the three frameworks yields a theoretically coherent account that shows how the starting conditions of the innovation system (historical systems theory) interact with the capacity of the state (state capacity theory) to drive observed outcomes in AI readiness. They are not just parallel descriptions; the frameworks are at different levels of the causal chain, and they complement each other by explaining how the differing trajectories, differing ecosystems, and differing capacities of the states could result in outcome divergence, despite having been structurally similar.

8. POLICY RECOMMENDATIONS FOR BANGLADESH

The causal analysis results in a series of policy recommendations in Bangladesh, which are theory-based, sequential and targeted. The recommendations are not based on growth of the AI strategy across the board but are grouped by the identified constraints: ecosystem underdevelopment, infrastructure deficits, and policy commitment gaps.

8.1 Adopt a Dedicated, Resourced National AI Strategy

The most critical policy need in Bangladesh is to implement a focused national AI policy going beyond the current Digital Bangladesh concept. This approach must encompass clear, committed government investments in AI infrastructure, human infrastructure in AI, support of AI ecosystem in the private sector, as well as international partnerships for AI cooperation. The strategy should be institutionalized, entity-wise either in an empowered ministry or in a dedicated AI mission similar to the IndiaAI Mission with implementation timelines, accountability systems and performance indicators. Lack of strategy sends a message to ecosystem actors that AI is not a top priority and causes a lack of investment from the private sector and academia. Importantly, the strategy needs to be resourced: words alone on an aspirational document are not enough to catalyze the increasing returns dynamics essential to ecosystem development.

8.2 Invest Strategically in AI Infrastructure

The targeted investment in AI infrastructure, specifically computing power and data governance, should be given priority in Bangladesh. Even as a small proportion of India's 38,000-GPU program, a national AI compute initiative would significantly reduce the cost of AI research, experimentation, and startup creation. Joint finance and partnerships with international cloud providers (Amazon Web Services, Google Cloud, Microsoft Azure) and multilateral development banks (World Bank, Asian Development Bank) may prove to be avenues for infrastructure investment that are not 100 percent domestic. At the same time, Bangladesh needs to establish a national Data Governance framework in order to increase the quality of its data, ensure interoperability between government departments and establish conditions for secure, AI-productive sharing of data between government, academia and the private sector.

8.3 Build the AI Human Capital Pipeline

Education for human capital development is the most important investment for Bangladesh's readiness for AI. These demands coordinated efforts along the education continuum, including the integration of AI and ML courses in the education system of universities and polytechnic institutes, setting up AI research centers at premier universities (such as BUET and the University of Dhaka), introducing

national AI fellowship and scholarship programs for talented students, and establishing bridges between the industry and universities for providing applied AI research opportunities and employment avenues. Bangladesh should also design a policy to tap into its diaspora, specifically Bangladeshi engineers and scientists in Silicon Valley, London and other technology hubs for their expertise, investments, and international connections.

8.4 Leverage Public Sector Adoption as an Ecosystem Catalyst

The premier Public Sector Adoption score in Bangladesh is a valuable strategic asset which is not being fully utilized as an AI ecosystem enabler. Bangladesh is 6th in South and Central Asia with an Index score of 82.78, which is higher than the average for South and Central Asia (42.1) and the world average (42.5) in 2025 (Oxford Insights, 2026). Government, as the biggest purchaser of digital services, should intentionally promote the development of the AI industry by setting the requirements for AI application in government service contracts for vendors, encouraging them to incorporate AI technology into their services, and creating a government department AI sandbox for startups to test AI application in the real environment of government service contracts. Brazil's creation of the first sandbox for AI in Latin America serves as a model to be directly transferred (Moraes, 2024). This demand-driven approach can help to speed up the development of AI capabilities in the private sector without the private sector investing as much as a supply-driven innovation system strategy would.

8.5 Pursue Strategic Regional and International AI Partnerships

Bangladesh should aggressively seek opportunities to cooperate on AI through the SAARC and BIMSTEC regional cooperation agreements, and bilateral cooperation with the leading countries in AI. The idea of AI infrastructure sharing between both countries, specifically Bangladesh's e-government infrastructure and India's compute capacity could be a mutual opportunity, as Bangladesh may have access to AI compute power and India to a demonstration partner in the context of its IndiaAI Mission in the Global South. International collaborations can help with technical assistance, funding, and access to global best practices, through UNESCO (with advisory role in the AI transformation in Bangladesh), World Bank and OECD AI Policy Observatory. Bangladesh also needs to join the international AI governance framework, such as OECD AI Principles, to demonstrate a regulatory policy alignment and encourage foreign investment in AI.

8.6 Build AI Safety and Resilience Capacity Concurrently

Though the Resilience pillar is considered as a downstream effect of the lack of ecosystems, rather than a standalone factor that can cause AI readiness gaps, Bangladesh should not postpone investments in safety and security until ecosystems are mature. Despite the current state of AI diffusion in Bangladesh, risks to AI safety in the country's digital environment already exist such as algorithmic bias, cybersecurity concerns, and misinformation. Bangladesh must develop an AI safety and ethical guideline, discuss the formation of a national AI safety institute (in a regional institute), and need to adopt AI safety standard in public sector procurement and regulatory processes for the private sector's deployment of AI. The proactive investment in safety measures will also have a signaling effect, which will show to the international community and investors that Bangladesh is a responsible actor on AI governance.

9. CONCLUSION

This paper has discussed the conundrum of how two structurally similar South Asian countries (India and Bangladesh) can have such different readiness levels for AI, based on the GARI 2025. The study has isolated and identified the main differentiating factors and followed their causal effects by means of a Most Similar Systems Design controlling for the colonial history, geographic proximity, democratic structure and development status.

The central finding is that the gap between the readiness of the two countries to use AI is mainly due to differences in the development of the innovation ecosystem and the availability of AI infrastructure rather than differences in the quality of governance and/or the digitalization of the public sector, in which Bangladesh leads ahead of India by 3.71 points. This discovery challenges the simplistic explanations that blame institutional quality or colonial history or geographic privilege for the lack of readiness to adapt to AI and calls for a focus on the historical patterns of innovation system development and the ability of the state to invest strategically in technology ecosystems for their formation.

The three theories used in this paper have complementary explanatory power. The temporal dimension is accounted for by historical institutionalism, which suggests that India's advantage with regard to the IT sector development was built over the past thirty years based on important policy milestones in the 1990s and 2000s, and that these benefits have accrued path-dependently, by building up institutional capacity, human capital stocks and density of IT ecosystems over time. The agency dimension: With its high-capacity AI governance system, India can coordinate between actors and mobilize resources that Bangladesh's AI specific institutional governance system is not yet able to match. From the structural perspective, the theory of innovation systems suggests that India's established national innovation system, characterized by strong ties between firms, universities, government and finance, facilitates AI development and dissemination at a scale that the nation's innovation system, built around the RMG industry, are unable to do at the same level in Bangladesh.

The contradiction is explained through digital Bangladesh e-government and different causal systems as the strong Bangladesh's PS Adoption score is not the measure of the AI Ecosystem maturity but a measure of the success of the initiative of e-governance in Bangladesh. The public sector digital strength is a real strategic asset a demand side catalyst for the development of an AI ecosystem which policy can intentionally tap by introducing procurement conditions for artificial intelligence and initiatives for public sector as AI laboratories.

The policy implications for Bangladesh are unequivocal but challenging: There should be a committed and resourced national AI policy; investments in compute power and data governance need to be targeted; there needs to be a sustained human capital development pipeline; the public sector's digital strength should be harnessed as an ecosystem catalyst and international partner engagement should be proactively pursued. While not a magic bullet (as historical institutionalism warns, path-dependency means gaps must be addressed through strategic persistence over time), these interventions are the points of leverage that can kick off the self-reinforcing dynamics that enable Bangladesh to become ready for AI.

This paper makes three original contributions to the literature on AI governance in the 'Global South'. First, it offers one of the few causally oriented, theory-driven comparative analyses of AI readiness divergence between developing countries. Second, it highlights the analytical utility of the MSSD approach to uncovering the drivers of the divergence of AI governance beyond structural considerations. Third, it provides a fine-grained analysis of the data from the GARI 2025 beyond the mere ranking comparisons and the development of a causal explanation with direct policy suggestions. The experiments detailed in this paper could be replicated with other South Asian country pairings to confirm the generalizability of the causal model, such as comparing Bangladesh and Sri Lanka, and India and Pakistan. Future research could further benefit from using a longitudinal panel design that would follow the trajectory of AI readiness over time, which could shed light on the mechanisms highlighted here.

In conclusion, this study reinforces the GARI's own finding that success with AI isn't something that happens overnight. It demands strategic, in-depth and intentional approaches to the building blocks, enablers and catalysts of national readiness for AI. Bangladesh has proven in the Public Sector Adoption pillar to be ready with institutional will and administrative capacity to transform radically through technology. The challenge and opportunity are to harness that ability to the more complex challenge of

developing the innovation ecosystem, infrastructure and human capital needed for AI readiness in the 21st century.

This study has three major limitations. First, it relies on a single composite index, the GARI 2025 by Oxford Insights. Its pillar weightings and indicator construction are open to debate and are not fully transparent to external researchers. Second, since the study uses one index at one point in time, it is difficult to separate measurement issues from actual differences in AI readiness. Therefore, the India–Bangladesh gap should be seen as consistent with the index findings rather than independently confirmed by them. Third, the N=2 comparative design is useful for theory-building under the MSSD framework, but it limits statistical generalizability. Similarly, the causal chain proposed in Section 4 should be understood as a plausible, theory-informed pathway rather than a proven causal sequence.

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