

AI and The Digital Transformation of Bangladesh

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In recent years, experts have expected huge growth in the global economy due to the emergence of AI. By 2030, China and the United States' GDPs are projected to increase by 26% and 14.5%, respectively, collectively driving 70% of the global economic impact (PwC, 2017). AI will hopefully double the annual economic growth rates worldwide by 2035 and boost labor productivity by up to 40%. Over the past few decades, Bangladesh has seen steady GDP growth and digital advancements and has transformed into a "tiger" economy. The growth rate of the GDP of Bangladesh is 5.7% in 2024, which is among the fastest growing economies in the world. Renowned financial institutions around the world have predicted that AI and its related fields will contribute greatly to the economy of Bangladesh in the upcoming years. The IMF predicts that AI economy of Bangladesh could boost 45% of gain (Ahmed, 2022). By implementing AI in various public and private sectors, Bangladesh can achieve immense benefits and potentials. This article explains how AI integration may help achieve the digital transformation of future Bangladesh

National AI Strategy

In order to enter the global race of AI with a strong foundation, the government of Bangladesh has proposed a national AI strategy. Bangladesh's national AI strategy aims to foster innovation and integration across sectors by establishing AI research centers and promoting collaborations among academic institutions, private companies,

and international partners. The national strategy stands on these six pillars:

1. Research and development
2. Skilling and re-skilling the AI workforce
3. Data and digital infrastructure
4. Ethics, data privacy, security, & regulations
5. Funding and accelerating AI start-ups
6. Industrialization of AI technologies (ICT Division, 2023).

The strategy encourages providing grants and funding for AI projects and developing local expertise. Skill development is prioritized, with plans to educate 50,000 individuals in AI through curricula in schools, vocational training, and continuous professional development programs. The strategy also focuses on building robust digital infrastructure, ensuring data interoperability and security, and developing public data repositories for AI research. A comprehensive regulatory framework will address ethical concerns like data privacy, bias, accountability, and transparency. The strategy supports AI startups with funding, mentorship, and tax incentives and promotes AI adoption in manufacturing, agriculture, healthcare, and finance by facilitating pilot projects and scaling-up successful implementations.

Potential Sectors for AI Intervention

Technology plays an important role in economies around the world, and latest technological innovations like AI driven trading, fashion and clothing sector, central banking, Intelligent

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Process Automation and so many. These AI technologies can rapidly change the economic growth of Bangladesh. Some categorical potential sectors are discussed below:

Service

In 2022, the service sector accounted for 51.04% of total GDP of Bangladesh (Ministry of Finance, 2023). However, AI adoption in public services remains limited, particularly in rural areas. The government has launched an online platform named "ekSheba", which has streamlined over 2700 government functions, offering a comprehensive one-stop service for Bangladeshi citizens. AI can enhance these services by providing personalized services, efficient resource allocation, and improved citizen engagement. However, awareness and user engagement in rural areas are limited. Proper deployment of these services can enhance public service efficiency, and the government should educate people about their benefits.

Manufacturing

The manufacturing sector, contributing 24.95% to GDP in 2024 (Ministry of Finance, 2023), is in the early stages of AI implementation. The key areas of this sector are predictive maintenance, quality control, and supply chain optimization. AI can support the Smart Economy by increasing productivity, reducing waste, and creating high-quality jobs. Bangladesh government is supporting this sector through initiatives like Digital Bangladesh Vision 2021, National Industrial Policy, and investment incentives. Despite early AI implementation and government support, challenges remain in utilizing AI in the manufacturing sector. Some solutions to these challenges include infrastructural upgrades, AI-focused training program expansion, improved access to finance, regulatory simplification, and Industry 4.0 integration.

Agriculture

Agriculture continues to be a major contributor to Bangladesh's GDP, representing 11.22% in 2022-2023 (Ministry of Finance, 2023). The key gaps in Bangladesh's agriculture sector include,

- i) Limited access to market intelligence, finance, and modern knowledge
- ii) Low productivity and high costs due to traditional farming methods
- iii) Insufficient farmer education and capacity
- iv) The need for effective public-private partnerships and long-term financial models for technology adoption

AI can help the agriculture sector of Bangladesh by enabling precision farming, maximizing crop yields through data analysis, forecasting weather patterns, controlling pests and crop diseases, and enhancing resource management. These technologies can contribute to advanced economy and society by improving decision-making, boosting production, and promote ecologically responsible agricultural practices. The Bangladesh government take some agricultural projects, encourage innovation and collaboration while utilizing IoT-based solutions for irrigation, livestock management, and automation.

Transportation

The government of Bangladesh has realized the future pace of development and initiated smart mobility and transportation projects with AI support. As per the Gazette of 2015, there is 3990.75 km of national highway, 4897.71 km of regional highway, and 13,587.82km of zilla road in Bangladesh (ICT Division, 2023). At initial phase, AI is currently being implemented by the government authority in the highway speed cameras, toll plazas and traffic monitoring stations to keep track of vehicles, ensure road safety and law enforcement. However, the usage of AI is not limited to these scenarios. There are many other potential sectors. Some of the most effective AI implementations include route management, energy-efficient cars and transportation, autonomous vehicles, intelligent port management (seaport, river port, airport, and rail station), and smart public transit. Other AI applications for smart mobility and transportation can include analyzing streamlined traffic patterns to reduce traffic congestion, using AI-powered speed management systems to prevent passenger harassment and robbery, tracking real-time crime data to improve public safety, and issuing licenses based on driver behavior analysis.

Education

The education rates in Bangladesh has been undergoing a positive change, with adult literacy rates rising from 51.77% in 2011 to 74.66% in 2022, with 76.56% male and 72.82% female (The Daily Star, 2022). Education is essential for driving prosperity and poverty reduction. Therefore, the country needs to invest extensively in ICT skill improvement initiatives to utilize its 45 million youth who are not prepared for the future job market. AI has the potential to transform the education industry by enabling the growth of "Smart Citizens. It can enhance educational tools and resources through personalized learning platforms that adapt to individual learning styles and paces. AI-driven assessments can provide

real-time feedback, helping students and educators identify areas for improvement. Virtual classrooms powered by AI can make quality education accessible to remote and underserved areas, bridging the digital divide. AI can also assist in administrative tasks, allowing educators to focus more on teaching and less on bureaucratic processes. These innovations not only improve educational outcomes but also ensure that students acquire the necessary skills for future job markets. Bangladesh may set an example for developing nations by focusing on innovation and digital literacy, which will likely result in a flexible and technologically proficient workforce.

Finance

In fiscal year 2023, finance and insurance activities accounted for 3.17% of total GDP in Bangladesh (Bangladesh Bank, 2023). Because of its complicated marketplaces and enormous datasets, the financial services industry has been a leader in AI adoption since the 1980s. This adoption aims to improve the customer experience and operational efficiency. Nowadays, AI is being utilized in electronic banking and centralized ICT operations in various countries, including the United States, Canada, China, Singapore, and India. AI-based risk management, fraud detection in banking, tailored banking services, one-stop financial service access points, personalized insurance solutions, and online customer care are all examples of potential AI usage. By integrating these updated features of AI in the banking and finance sector, Bangladesh may enhance production, reduce costs, and drive competitiveness in trade and finance and help create Smart Economy.

Healthcare

The healthcare sector, contributing 3.46% to GDP in 2023 (Bangladesh Bank, 2023), faces significant challenges with understaffing, underfunding, and outdated practices. AI implementation in the healthcare sector of Bangladesh is still not widespread but has promising potentials. Some notable applications can be wearable IoT devices for high-risk patients, decision support systems, centralized health registries, and predictive analytics for chronic diseases. AI can revolutionize healthcare by improving doctor recommendations, appointment management, epidemic forecasting, and virtual medical assistance, ultimately enhancing the quality and accessibility of healthcare services in Bangladesh.

Challenges and Solutions

Expanding AI-focused training programs and incorporating AI literacy into the education system can help bridge the skills gap. Additionally, developing comprehensive regulations is essential to address data privacy, ethical concerns, and ensure transparency in AI applications. Public awareness campaigns can also play a vital role in educating citizens about the benefits and safety of AI. Investments in high-speed internet, AI-compatible hardware, comprehensive AI training, and expedited 5G deployment are essential. Workforce transition programs, efficient AI systems, transparency regulations, AI safety standards, and ethical guidelines are crucial for effective AI integration. Furthermore, fostering partnerships between the government and the private sector can help co-develop and implement practical and widely accessible AI solutions.

Conclusion

Bangladesh is one of the newest participants in the AI race; however, the majority of industrialized and developing nations are making significant investments in AI. The use of artificial intelligence is becoming more and more common among entrepreneurs as a valuable resource for workers. It is already present in many businesses and is revolutionizing the way societies and organizations function. The continuous flurry of AI tactics indicates a growing interest among global governments. But, Bangladesh is not yet fully involved in every aspect of AI innovation. To achieve significant social improvement, we must learn how to utilize AI in various spheres of society. With strategic integration, AI can help Bangladesh accelerate digitalization, drive innovation, and enhance inclusivity, thereby achieving the digital transformation of Bangladesh by 2041.

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