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## Artificial Intelligence as a Potential Risk in Developing Countries: A Qualitative Analysis from Bangladesh's Perspective

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### Abstract

This study examines the potential risks of artificial intelligence (AI) in developing countries, with Bangladesh considered as a key case study. The research adopts a desk-based qualitative approach and is based on secondary data collected from government reports, publications of international organizations, and reliable online sources covering the period from 2017 to 2026. Content analysis and thematic analysis were employed to evaluate AI-related risks within the social, economic, and institutional realities of Bangladesh. The study analyzes issues such as the quality of education, gaps in technological skills, employment structure, the digital divide, weak governance, and social inequality, and categorizes them into six major themes: the spread of misinformation, health and safety risks, the impact of AI on the workplace, urban–rural digital disparities, and risks in the education sector. The findings indicate that AI-driven automation is reducing employment in labor-intensive sectors and increasing income inequality, particularly among low-skilled and marginalized populations. At the same time, weak policy frameworks, limited technological infrastructure, and shortages of skilled human resources hinder the fair and effective implementation of AI in developing countries like Bangladesh. The study concludes that the potential risks associated with AI can be significantly mitigated through strong and inclusive policy frameworks, improved infrastructure, enhanced technological literacy, and the development of skilled human capital.

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### 1. Introduction

Artificial intelligence (AI) is currently one of the most discussed and rapidly evolving technological domains worldwide. Over time, AI has established itself as a distinct field of research and application, with its capabilities and effectiveness significantly increasing. Studies indicate that AI has continuously advanced from its inception and is expected to keep evolving in the future [1]. To keep pace with developed countries, the use of AI technology is becoming increasingly indispensable. Research also highlights that AI can play a crucial role in the sustainable development of developing countries [2]. In Bangladesh, AI adoption is gradually expanding across various sectors to support development and innovation. AI is not limited to technological advancement; it is closely linked with the education system, social awareness, and overall societal development [3]. However, while AI offers significant benefits, it also carries potential risks and harmful effects [4, 5]. Biana & Joaquin (2025) [6] note that low- and middle-income countries (LMICs) face pressing developmental challenges where AI may not always provide immediate solutions. In Bangladesh, the growing public adoption of AI complicates the assessment of its real impacts, opportunities, and misuse, highlighting the need to consider AI as a potential risk in developing country contexts.

## 2. Literature Review

Existing research clearly indicates that artificial intelligence (AI) offers developing countries both opportunities and challenges. On one hand, AI can promote development, innovation, and efficiency; on the other hand, it exerts multidimensional pressures on social, economic, and institutional structures. In Bangladesh, concerns over AI misuse are growing, as the technology is increasingly employed in corruption, crime, misinformation, and other harmful activities, despite its theoretical potential to enhance innovation and productivity [7]. In employment, AI-driven automation has emerged as a major challenge. Rahman *et al.* (2020) [8] note that AI is being used as a substitute for human labor in sectors such as construction, delivery services, public transport, manufacturing, surgery, military, and firefighting, with the greatest employment risks observed in manufacturing due to AI's higher efficiency compared to humans. In developing countries like Bangladesh, infrastructural limitations, lack of skilled human resources, urban–rural digital divides, and scarcity of culturally relevant content pose serious threats to education and social equity [9]. Although strategic investment, policy reforms, education, regulatory frameworks, and public–private partnerships are emphasized for AI adoption [10], in reality, higher education in Bangladesh remains in its early stages of AI integration. Insufficient digital infrastructure, shortage of qualified personnel, and underinvestment in AI-related resources are key obstacles to effective implementation [11]. Furthermore, the lack of digital infrastructure, high-quality digitized data, AI-skilled workforce, and data privacy and security regulations limits AI capacity in low-income countries (LICs), deepening global technological inequality [12]. In human resource management, AI usage in Bangladesh is currently limited, mostly applied in recruitment and selection processes, with skills gaps and data privacy concerns posing significant challenges [13]. From an industrial perspective, Mahmud *et al.* (2025) [14] argue that realizing AI's full potential requires extensive education, strategic implementation planning, and skill development. Similarly, Dave (2024) [15] highlights that while AI adoption rates are similar across countries, implementation effectiveness varies significantly due to differences in technological infrastructure and investment strategies, underscoring the need for context-specific infrastructural development. Additionally, AI-driven misinformation and deepfake technologies amplify social and political instability risks, raising profound ethical concerns [16].

Overall, the literature suggests that without relevant policies, skill development, and institutional preparedness, AI proliferation in developing countries may pose greater risks than benefits. While existing studies discuss AI use, potential, and challenges in Bangladesh and other developing nations, most focus on specific sectors (e.g., education, industry, or HR) or technical capabilities. They rarely analyze social inequality, employment risks, policy weaknesses, and data security impacts within a unified framework. Consequently, there is a clear analytical gap regarding the multidimensional risks of AI expansion in labor-intensive, infrastructure-constrained developing countries like Bangladesh an issue this study aims to address.

## 3. Methodology

This study was conducted using a qualitative research approach, aiming to examine why artificial intelligence (AI) may be considered a potential threat in the context of a developing country, particularly Bangladesh, by analyzing its social, economic, and institutional realities. The research is explanatory and analytical in nature, seeking to understand AI's potential risks and challenges within a contextual framework.

### 3.1. Research Design

A desk-based qualitative research design was employed. Content analysis was used to examine existing documents, reports, and datasets, identifying underlying meanings, patterns, and implications.

### 3.2. Type and Sources of Data

The study relies entirely on secondary data. For the findings, data from Bangladesh and select other countries were analyzed, including statistics on literacy, digital skills, employment structure, technological infrastructure, and government policies. Primary sources included:

1. Government databases and statistics (e.g., education, labor, population, and technology data)
2. National reports from Bangladesh
3. Publications from international organizations and development agencies

For the literature review, previously published research articles, peer-reviewed journals, and academic literature were utilized to analyze AI's impact, risks, and ethical considerations in developing countries.

### 3.3. Timeframe of Data Collection

Data spanning 2017 to 2026 were used to reflect recent technological changes and policy realities accurately.

### 3.4. Data Analysis

Collected data were analyzed using thematic analysis. AI-related risks and challenges were categorized into six key themes, such as the spread of misinformation, workplace impacts, urban–rural digital divide, educational risks, weak governance and policymaking and health and safety risks. These themes provided a framework to explain why AI may emerge as a potential threat in the Bangladeshi context.

## 4. Findings and Discussion

A review of Bangladesh's current infrastructural and educational realities reveals that, despite a large population, a significant portion of the country remains outside the reach of adequate formal education. While overall literacy rates have improved comparatively, a substantial number of people are still deprived of access to effective and quality education. Even among those with formal education, technological skills remain limited. In most cases, individuals lack knowledge of what artificial intelligence (AI) is and how it can be applied, which results in many companies being unable to utilize AI effectively [17]. Moreover, the AI adoption process is uneven, with low-income countries (LICs) particularly lagging behind [12].

Unlike developed countries, there are still no clear regulations or guidelines in place to impose effective control over AI use [18].

**Table 1:** Landscape of Different Sectors in Developing Countries

Developing countries	Population	Unemployment	Technological Weakness	Illiteracy	Weak Governance
Bangladesh	High	Present	Present	Moderate	Present
India	High	Present	Present	Moderate	Present
Pakistan	High	Present	Present	Moderate	Present
Nigeria	High	Present	Present	Moderate	Present
Brazil	High	Present	Present	Low	Present

Source: Compiled from various online sources, 2026

The chart shows that developing countries such as Bangladesh, India, Pakistan, Nigeria, and Brazil have comparatively large populations. These countries also face unemployment, which poses challenges to both economic and social stability. Additionally, technological weaknesses are prevalent, acting as major obstacles to the effective implementation of artificial intelligence (AI). In terms of education, Bangladesh, India, Pakistan, and Nigeria exhibit moderate literacy rates, while Brazil shows relatively higher educational standards, though illiteracy still exists. Weak governance is observed across all these countries, where the lack of robust policies and regulatory frameworks hinders the effective adoption and benefits of AI. Overall, the data indicate that population size, unemployment, technological capacity, education quality, and governance structures present significant challenges to AI adoption in developing countries.

**4.1. Spread of Misinformation**

The study reveals that the number of smartphone users in Bangladesh is steadily increasing, although internet usage shows both rises and declines [19]. Many users primarily utilize technology for entertainment and social communication. While platforms such as YouTube and

Facebook are widely used, users often lack the capacity to verify the authenticity of information or news obtained from these sources. Artificial intelligence (AI) enables the rapid creation of audio, video, and images, which can challenge public perception. Due to Bangladesh’s weak data protection framework, AI increases risks of personal data misuse, surveillance, and profiling, posing a serious threat to citizens’ rights and privacy. The use of AI, deepfakes, and synthetic videos has added a new dimension to the spread of misinformation, creating social confusion and uncertainty [20]. During the COVID-19 pandemic, misinformation further complicated adherence to social norms [21]. Digital illiteracy amplifies the risk of misinformation and misperceptions, which have been exploited for political objectives, and have even triggered violent incidents in Bangladesh. The internet, social media, and computing technologies now penetrate daily life as well as state and governmental operations [22]. Misinformation can influence public opinion and political decisions [23]. To address these challenges, journalism students in Bangladesh recognize the need to learn, apply, and critically test AI, improving both understanding of misinformation and technological literacy [24]. Nonetheless, AI-generated misinformation continues to appear in the country’s media outlets.



Source: Viral CCTV footage circulated on online and social media platforms

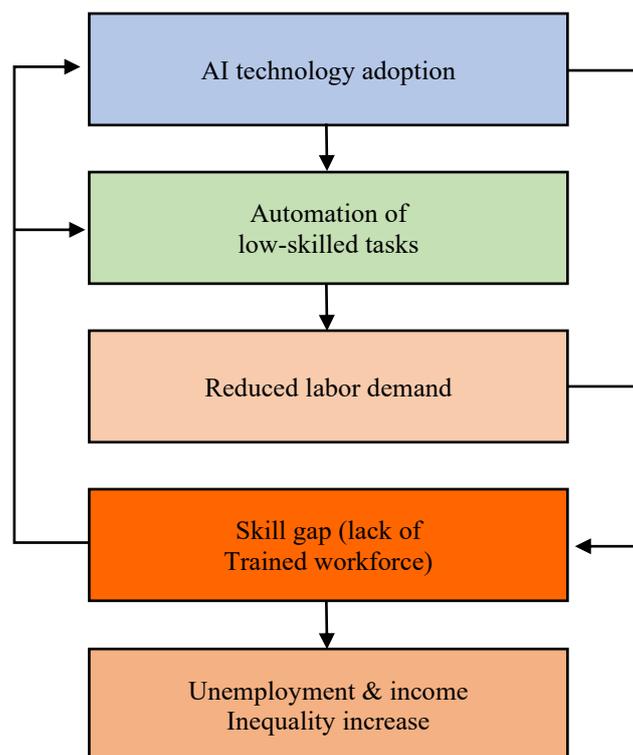
**Fig 1:** A Real Incident Triggered by Misinformation

The impact of misinformation is not confined to online confusion; it can manifest as severe real-world violence, as demonstrated by a recent incident in Bangladesh. In this case, a person lost their life after being targeted by public outrage fueled by a baseless piece of misinformation circulating on social media. While the incident did not directly involve AI-generated content, it serves as a concrete example of the dangerous social consequences of false information. Analysis of the incident indicates that the lack of fact-checking capacity, rapid emotional reactions on social media, and weak institutional verification mechanisms collectively allowed misinformation to escalate into real-world violence. In this context, the inclusion of AI-driven deepfakes, synthetic videos, or automatically generated misleading content could exacerbate the situation significantly. This underscores that AI-enhanced misinformation in developing countries could dramatically increase risks, threatening public safety, social stability, and human rights. Consequently, addressing AI-based misinformation requires not only technical solutions but also enhanced digital literacy, ethical journalism, and robust policy implementation.

#### 4.2. Workplace Impact and Inefficiency

Bangladesh faces a disproportionately large population relative to its resources, creating a substantial demand for

employment. A significant portion of the population remains directly involved in agriculture, yet precision agriculture remains largely aspirational <sup>[25]</sup>. In this context, unemployment remains a critical challenge <sup>[26]</sup>. Failure to convert population into productive human capital could impede both present and future development <sup>[27]</sup>. While AI introduction may create new employment opportunities, it also risks eliminating certain occupations, especially those requiring low to medium skill levels <sup>[28]</sup>. Due to the shortage of skilled labor, AI-driven automation in Bangladesh's export-oriented garment industry has increased productivity, but reduced labor dependency, creating potential employment risks and challenges <sup>[29]</sup>. Similarly, AI applications in the healthcare sector may decrease some employment opportunities <sup>[5]</sup>. Although literature on AI's impact on employment and wages does not provide definitive conclusions <sup>[30]</sup>, Çetin & Kutlu (2025) <sup>[31]</sup> argue that technological change inevitably generates unemployment, a claim that may be somewhat exaggerated. AI could create better employment opportunities in the future, but human preparedness is essential to manage the associated uncertainties <sup>[8]</sup>. One of the key challenges for financial institutions in developing countries is the shortage of skilled AI personnel <sup>[26, 32]</sup>.



Sources: Author's own creation

Fig 2: AI-Driven Job Displacement Cycle

The following figure presents a cyclical process illustrating how artificial intelligence (AI) can gradually reduce employment and increase income inequality in developing countries. In the first stage, AI technology adoption occurs, where governments, industries, and private organizations implement AI and automation across various sectors to enhance productivity, reduce costs, and remain globally competitive. As a natural consequence, the second stage involves the automation of low-skilled tasks routine, repetitive, and low-skill jobs, such as factory assembly work,

data entry, ticketing, or basic service tasks, are progressively replaced by AI-driven systems, reducing the need for human labor. The third stage shows reduced labor demand, as organizations require fewer new hires and, in many cases, fewer existing workers; this effect is particularly pronounced in labor-intensive sectors of developing countries. The fourth stage becomes critical due to the skill gap (lack of trained workforce), as most workers lack the digital literacy, technical skills, and training necessary for new AI-driven tasks, and the limited capacity of education and reskilling

programs prevents them from adapting quickly. The fifth and final stage results in unemployment and increased income inequality, where joblessness rises, a small group of highly skilled workers benefits from AI, while low-skilled workers fall further behind in income and opportunities.

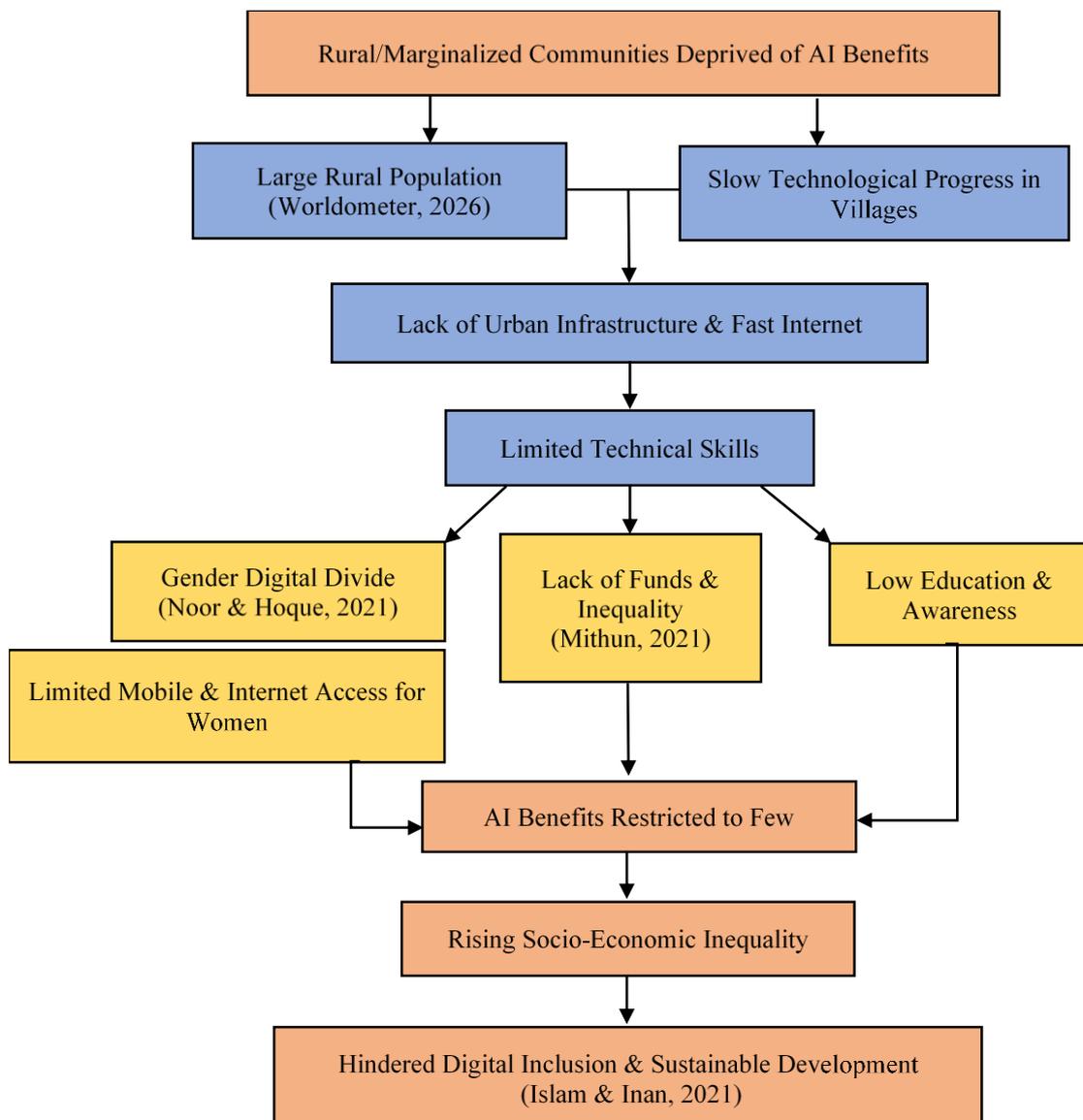
This fourth-stage crisis further pushes organizations toward greater AI and automation adoption, creating a self-reinforcing cycle. Overall, the figure highlights that without proper policies, skills development, and social protection systems, the rapid and uncontrolled expansion of AI technology may pose serious long-term social and economic challenges for developing countries.

### 4.3. Urban-Rural Divide

In Bangladesh, the majority of the population resides in rural areas [33]. Compared to urban regions, technological advancement in rural areas is progressing at a much slower pace. As a result, the use of artificial intelligence (AI) is further deepening the existing digital divide. Due to city-

centric infrastructure, high-speed internet access, and the unequal distribution of technological skills, rural and marginalized communities are being deprived of the benefits of AI, thereby exacerbating socio-economic inequalities. Noor and Hoque (2021) [34] note that gender based digital disparities also persist in rural Bangladesh, where women have less access to and use of mobile phones and the internet compared to men. To achieve comprehensive digitalization of the country, it is essential to identify and address the challenges that create digital inequality and digital divides [35]. Another major challenge for developing countries is the lack of financial resources, along with unequal allocation of funds, which has been well documented [36].

Overall, the urban-rural digital divide and gender-based inequalities are confining the benefits of AI to a limited segment of the population. If these disparities are not addressed, achieving digital inclusion and sustainable development in developing countries will remain significantly hindered.



Sources: Author's own creation

Fig 3: Rural/Marginalized Communities Deprived of AI Benefits

This flowchart illustrates the urban-rural digital divide in Bangladesh and demonstrates how the benefits of Artificial Intelligence (AI) remain largely confined to a limited segment of the population. At the top of the flowchart, the central issue is highlighted: “Rural and marginalized populations are deprived of AI benefits,” which represents a major challenge to achieving broader digital inclusion and sustainable development across the country. Several key factors underpin this disparity. First, the predominance of rural populations<sup>[33]</sup>, where the majority of Bangladeshis reside, contributes significantly to the slower pace of technological advancement outside urban centers. Consequently, access to AI-based opportunities is delayed for rural communities compared to their urban counterparts. Second, the slower development of technological infrastructure in rural areas, coupled with city-centric infrastructure and limited high-speed internet connectivity, poses a significant barrier for rural populations to effectively utilize AI. Moreover, the uneven distribution of technological skills further exacerbates this problem, preventing marginalized communities from benefiting fully from AI-enabled services. The flowchart also identifies additional challenges that deepen the digital divide. Notably, gender-based digital inequality<sup>[34]</sup> restricts women from accessing mobile devices or the internet to the same extent as men, leading to their exclusion from AI benefits. Financial constraints and economic disparities, as well as limited education and digital awareness, further hinder the ability of rural populations to engage with and benefit from AI technologies. As a result of these combined factors, it becomes evident that the advantages of AI remain confined to a relatively small portion of the population. This concentration of benefits contributes to the widening of social and economic inequalities, ultimately affecting the overall development process of the country. At the final stage of the flowchart, it is emphasized that this restricted access to AI significantly impedes digital inclusion and sustainable development<sup>[35]</sup>, posing a serious challenge to the nation’s overall progress.

In summary, the flowchart demonstrates that the urban-rural digital divide in Bangladesh, coupled with gender-based disparities, financial and educational limitations, and a lack of technological skills, collectively constrain the dissemination of AI benefits. If these challenges are not addressed, they will continue to hinder the country’s efforts toward comprehensive digital inclusion and sustainable development.

#### 4.4. Risks in the Education Sector

There is a deep and inseparable relationship between technology and education. Modern, technology-driven systems are essential for the education sector of every country<sup>[37, 38]</sup>. However, the unequal and unplanned implementation of AI in education is disrupting the balance of educational quality. While certain institutions benefit from advanced technological facilities, under-resourced institutions are falling behind. Moreover, excessive reliance on AI is negatively affecting students’ critical thinking skills. Studies and observations indicate that students are increasingly using AI to complete assignments, prepare presentations, and perform similar academic tasks. The Vice-Chancellor of the National University remarked, “During a recent visit to a college in Dhaka, I saw students using AI on their mobile

phones to take exams inside the hall, while the principal sat outside sipping tea”<sup>[39]</sup>. Additionally, during the 2025-26 academic year, two candidates were detained at Rajshahi University for attempting to cheat by using AI to answer questions in the ‘C’ Unit undergraduate (honours) admission test<sup>[40]</sup>. Although students who have access to technology have benefited in certain aspects, research shows that students who did not rely heavily on technology demonstrated more positive developmental outcomes in comparison<sup>[41]</sup>. Nevertheless, meaningful progress cannot be achieved by completely excluding technology. In developed countries, the use of AI in education has expanded significantly, whereas in developing countries like Bangladesh, its application remains limited and underdeveloped. Therefore, a cautious and comprehensive evaluation of the costs and benefits of implementing AI systems in classrooms is necessary. Educational institutions must also ensure appropriate policies and mechanisms to protect student privacy and prevent potential bias<sup>[42]</sup>. However, adopting and effectively enforcing such policies is comparatively more challenging and time-consuming for developing countries.

#### 4.5. Weak Governance and Policymaking

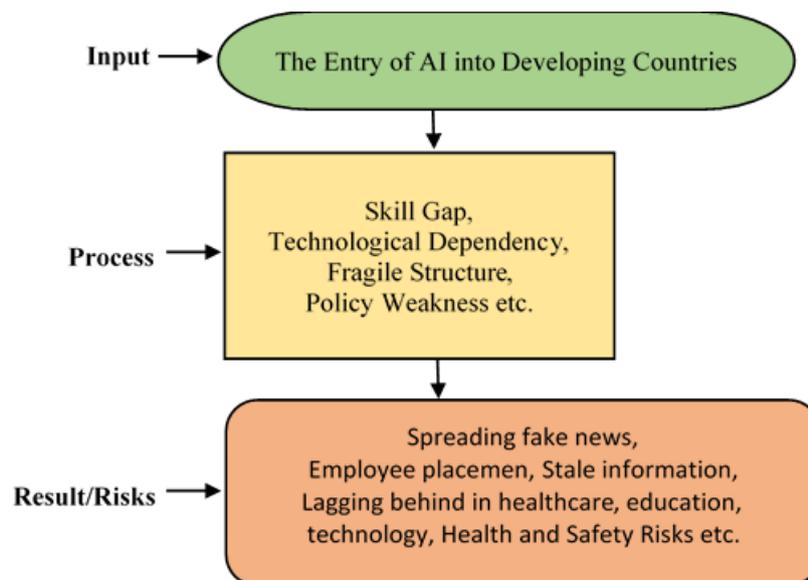
Artificial intelligence (AI) is expanding rapidly in Bangladesh; however, strong and effective policies, legal frameworks, and governance structures related to AI have yet to be fully developed or implemented. As a result, significant challenges are emerging in ensuring citizen safety, privacy, and the protection of human rights in the use of AI technologies. According to the AI Readiness Assessment Report published by UNESCO (2025)<sup>[43]</sup>, Bangladesh’s policies and regulatory mechanisms related to data protection, cybersecurity, and AI remain underdeveloped. This creates substantial risks in the storage, processing, and use of personal data. In particular, the absence of transparency and accountability mechanisms may lead AI-based systems to produce incorrect or biased decisions. Such outcomes can result in privacy violations, increased social inequality, and the erosion of fundamental human rights. Moreover, Bangladesh has yet to fully enact a dedicated AI-specific law or a comprehensive governance framework. In other words, there is no clearly established or enforceable legal structure governing the use, regulation, and accountability of AI systems; most initiatives remain at the draft or conceptual stage. Consequently, when an AI system makes an erroneous decision, it is unclear who should be held responsible or how citizens’ rights can be effectively protected<sup>[44]</sup>. AI technologies rely heavily on data usage and the collection of personal information, which can create serious concerns regarding data protection and privacy. Due to the absence of a robust data protection law in Bangladesh, sensitive user information such as health, financial, or socio-political data may be used or shared without authorization. This not only constitutes a violation of privacy but also has the potential to intensify social inequality<sup>[45]</sup>.

In summary, weak governance and inadequate AI policymaking in Bangladesh position AI technology as a potential threat to human rights, privacy, and fair use. Unless strong institutional measures, transparent regulatory oversight, and citizen-centric policies are developed and implemented promptly, these risks are likely to become more severe<sup>[43]</sup>.

#### 4.6. Health and Safety Risks

Artificial Intelligence (AI) is rapidly entering the healthcare sector in Bangladesh and has the potential to play a significant role in improving diagnosis, treatment recommendations, and overall healthcare management. However, alongside its potential benefits, AI also introduces considerable health and safety risks. First, AI-based diagnostic and treatment systems carry the possibility of errors or incorrect decisions, which can expose patients to inappropriate treatment or even harm. For instance, if a single diagnostic model malfunctions in a hospital or clinic, it could result in the same type of erroneous treatment for numerous patients [46]. Such errors, if replicated across multiple facilities, could have a widespread impact on patient safety and trust in healthcare systems. Second, the proper functioning of AI relies heavily on vast amounts of data, including electronic health records (EHRs), medical imaging, and patients' personal and genetic information. These data are highly sensitive and vulnerable to cyberattacks, data breaches, or unauthorized access. In a developing country like Bangladesh, where digital security infrastructure remains limited, the risk of compromising patient privacy is even greater [47]. Third, AI models are only as unbiased as the data used to train them. If training datasets are heavily

concentrated on certain populations, the AI may provide biased or inaccurate recommendations for other groups of patients. This issue becomes particularly critical in Bangladesh, where healthcare access and information are unevenly distributed across regions and social groups [48]. Such bias could exacerbate existing inequalities and lead to unequal healthcare outcomes. Fourth, accountability and liability remain major challenges in AI-driven healthcare. If an AI system makes a wrong decision or contributes to a medical error, it is often unclear who bears responsibility whether it is the physician, the hospital, or the software developer. This lack of clarity can create legal and ethical complications and reduce trust in the healthcare system [49]. In the context of Bangladesh, where healthcare infrastructure is limited, patient awareness varies, and digital literacy is uneven, these AI-related risks could have particularly serious consequences. Mistakes in diagnosis, breaches of privacy, biased recommendations, and unsafe patient behavior collectively may lead to instability in the healthcare system. Therefore, before implementing AI in healthcare, it is imperative to establish robust safety policies, secure data protection measures, comprehensive training for healthcare professionals, and clear accountability mechanisms for patients and providers alike.



Sources: Author's own creation

Fig 4: Observations on why ai (artificial intelligence) can be a challenge in developing countries

This figure illustrates a process-oriented sequence depicting the entry of artificial intelligence (AI) into developing countries. In the initial stage (Input), the introduction of AI is presented as a driver of development, skill enhancement, and modernization. However, the realization of this potential is constrained by several process-related challenges (Process), including shortages of skilled human resources, excessive dependence on technology, fragile and uneven infrastructure, and weak policy and governance frameworks. These limitations hinder the effective, equitable, and inclusive application of AI. Consequently, multiple adverse impacts emerge at both societal and national levels, such as the spread of misinformation, difficulties in workforce placement and employment, reliance on outdated or inaccurate information, and lagging progress in key sectors including healthcare, education, and technology. The figure clearly demonstrates that achieving the benefits of AI requires more than mere

technological adoption. It demands the development of skilled human capital, the establishment of robust and sustainable infrastructure, the formulation of effective and forward-looking policies, and the implementation of coordinated and responsible governance mechanisms. In the absence of these critical elements, AI risks becoming a new form of challenge rather than a catalyst for development in developing countries.

#### 5. Conclusion

The findings of this study clearly indicate that artificial intelligence (AI) has the potential to exert a dual impact in developing countries, particularly in the context of Bangladesh. On the one hand, AI technologies can facilitate sustainable development and global competitiveness by fostering innovation in education, enhancing skills, increasing productivity, and improving service quality. On

the other hand, due to weak governance systems, inadequate and inconsistent policy frameworks, limited technological infrastructure, educational gaps, and shortages of skilled human resources, the use of AI often becomes unregulated and uneven. As a consequence, a range of multidimensional social and economic risks emerge, including the spread of misinformation, health and safety risks, contraction or structural transformation of employment in the labor market, widening income inequality, an increasing digital divide between urban and rural areas, and growing disparities in the education sector. Although there is scholarly debate regarding the extent to which AI leads to job losses, the risk of employment reduction or job displacement among low-skilled and semi-skilled workers cannot be dismissed. Previous studies Khan *et al.* (2024); Moli, J. (2026); Wakunuma *et al.* (2020) <sup>[5, 28, 29]</sup> support this concern, while Çetin & Kutlu (2025) <sup>[31]</sup> present a contrasting perspective. Nevertheless, considering the structural characteristics of labor markets in developing countries, an AI-driven job displacement cycle may pose significant challenges, particularly for unskilled and low-skilled workers. An analysis grounded in Bangladesh's social, economic, and institutional realities suggests that, in the absence of adequate preparation and effective policy interventions, the potential negative impacts of AI may outweigh its benefits thereby constituting a substantial risk for developing countries. Based on the study's analysis, addressing these risks requires the formulation of strong and inclusive policy frameworks, the establishment of effective governance mechanisms, the strengthening of public-private partnerships, the expansion of digital literacy, and substantial investment in reskilling and upskilling human resources.

Overall, AI should not be viewed merely as a technological innovation; rather, it is a transformative force with profound and long-term implications for social and economic structures. To achieve the sustainable benefits of AI in developing countries, integrated policy frameworks, strong institutional capacity, a well-prepared workforce, and the widespread expansion of technology-oriented education are essential. With appropriate preparation and strategic intervention, the potential risks of AI can be significantly reduced, while simultaneously opening new opportunities for social, economic, and educational advancement.

## 6. Limitations of the Study

This study is based on a desk-based qualitative research approach that relies entirely on secondary data sources. As a result, primary data such as interviews, surveys, or case studies could not be incorporated, which may limit the reflection of real-world experiences and individual perspectives. Additionally, since the sources used were collected across different time periods and contexts, maintaining consistency among data points posed certain challenges. Future research incorporating primary data collection and quantitative analysis would allow for a more comprehensive and precise assessment of the impacts of AI.

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## 8. Competing Interests

The author declares that there are no competing interests.

## 9. Authors' Contributions

The author solely conceptualized, conducted, analyzed, and wrote the study. The author has read and approved the final manuscript.

## 10. Ethical Statement

This study did not involve human participants or animal subjects and therefore did not require ethical approval.

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