The Impact of AI on Empowerment, Employment and Skill Transformation in Bangladesh's IT Sector: A Case Study of Digital Service-Based Sub-Sectors

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Abstract: AI technology's arrival has dramatically reshaped numerous sectors, altering employment patterns and economic distribution. This paper examines AI's impact on empowerment and employment in Bangladesh, highlighting shifts in skill acquisition, job displacement, and social equity. AI is creating new opportunities in digital marketing, graphic design, and web development, and boosting freelancing within the gig economy. However, automation raises concerns about job security, particularly for low-skilled workers. Ethical implications demand workforce adaptation, and the rise of digital clusters offers both promise and challenges, including reduced gender discrimination. To ensure AI's benefits are equitably shared, policy measures like education reform, retraining programs, and public-private partnerships are crucial. Ultimately, while AI offers pathways to economic empowerment, it also poses risks to job security and social equity, making strategic reforms essential for an inclusive, AI-driven future in Bangladesh.

Keywords: *Impacts of AI; IT Sector in Bangladesh; AI and Employment; AI-driven Skill Transformation; Job Displacement and AI; Economic Impacts of AI;*

1. INTRODUCTION

Artificial Intelligence (AI) is rapidly reshaping industries across the globe, including key sectors like healthcare, finance, manufacturing, and IT. In Bangladesh, AI is particularly transforming the IT sector, offering both opportunities for empowerment and challenges related to employment. AI's ability to automate tasks, enhance productivity, and create new job roles is driving significant changes in how workers and organizations approach skill development and employment. Before 2030, it is estimated that 14% of the global workforce may need to change jobs due to AI-related technological advancements. This transition is similar to the shift of workers from fields to factories during the industrial revolution but will occur within a considerably shorter period. [1] This research paper explores the multifaceted impact of AI on employment and empowerment within Bangladesh's IT sector. As AI technology advances, it introduces both new opportunities and challenges for workers. While AI fosters innovation and efficiency in fields like digital marketing, graphic design, and web development, it also raises concerns about job displacement, particularly for low-skilled workers. Furthermore, AI's potential to reduce gender bias and enhance employment opportunities for women presents a promising aspect for creating a more equitable workforce. The implementation of artificial intelligence applications will reshape people's lifestyles and social relationships, requiring society to adapt to these changes [2]. This paper will assess the impact of AI on worker productivity, the evolution of labor divisions, and the creation of new roles requiring AI skills. We will also explore how the growth of digital and virtual industrial clusters is transforming employment patterns and creating opportunities for freelance and gig economy workers. In addition to this, the research will evaluate the ethical implications of AI adoption, such as job security concerns and unequal access to technology. Through a combination of case studies, data analysis, and theoretical frameworks, this paper aims to explore the relationship between AI and empowerment, while also addressing challenges related to job security and skill development. In particular, this study will focus on how AI can be leveraged to mitigate gender discrimination in the workforce and provide policy recommendations for achieving inclusive, sustainable employment growth in Bangladesh, especially for low-skilled workers. As AI continues to advance, it is crucial to understand its effects on the workforce and adapt accordingly to ensure that the benefits of technological progress are equitably shared across all segments of society.

2. LITERATURE REVIEW

Technological revolutions have consistently transformed economies and labor markets, altering employment patterns. This Industrial Revolution introduced mechanization, boosting productivity but displacing traditional jobs. Later, the rise of electricity and mass production led to new industries while also causing job losses in crafts and manual labor. The Information Age, driven by computers and digital technologies, brought greater connectivity and automation but disrupted many traditional job roles. It also created skillful jobs on internet platforms. Traditional jobs were limited to specific regions, but in this information age, the job market has expanded and is no longer confined to specific locations. It has become global.

Technological disruptions in the past show how AI may impact employment. Historically, tech advances displaced some jobs but created new ones, like how farming mechanization led to more manufacturing jobs. Workers often needed to learn new skills to stay employed, similar to the shift from agriculture to industry. Though disruptive at first, these changes ultimately boosted productivity, economic growth, and living standards over time. [3]

Artificial Intelligence (AI) presents a unique challenge by automating cognitive tasks traditionally performed by humans. AI's ability to disrupt occupations requiring analytical, decision-making, and creative skills, combined with its continuous improvement through machine learning and natural language processing, creates ongoing challenges for workers and policymakers. The rapid pace of AI adoption demands proactive measures to address workforce adaptation, skills development, and to promote inclusive growth in the face of technological disruption.

AI impacts employment in three key ways: job creation, job destruction, and a blend of both, with a significant focus on industries like manufacturing. In China, AI is reshaping labor demand, productivity, and job structures, especially through the adoption of industrial robots. Additionally, AI presents opportunities to address workplace issues such as gender discrimination, which is a positive side of AI. But it also reduces some job opportunities, especially where China is the most populated country in the world.

While AI could drive innovation and economic growth, it also poses risks like job displacement, particularly in mid-skill sectors, leading to labor market polarization. [4] This polarization may enhance income inequality, with high- and low-skill jobs increasing, but middle-income positions declining. The text emphasizes that current models are speculative, and more empirical research is needed. Policymakers are encouraged to implement redistributive measures, such as taxing capital over labor, to address inequality. The long-term effects of AI remain uncertain, with possible positive and negative outcomes for employment and wages.

The economic impact of AI on employment and income disparities explores how AI is affecting different job sectors and widening income inequality. Without intervention, AI will worsen existing income disparities, with rapid technological changes outpacing the ability of low-skilled workers to adapt. The effects are most pronounced in the U.S. but could impact other countries, depending on their institutional and political frameworks. [4] Globalization and remote work are additional challenges, with the global labor market exerting downward pressure on wages and increasing inequality, particularly in developing countries such as Bangladesh.

Traditional economic models often consider the trade- off between negative effects, such as job displacement, and positive effects like increased employment due to complementarity between humans and machines. [5] However, concerns arise that AI might be different due to its ability to substitute human labor more directly. Current models suggest that AI could have a unique impact, but there is limited empirical evidence to support these claims. While AI might accelerate innovation and transform industries, the actual effects on employment and income remain speculative. AI could either lead to a wealthier economy or exacerbate income inequality, depending on how it is integrated. [6]

The economic impact of AI on employment and income disparities is examined through the experiences of high-skilled and low-wage workers. [3]

AI has also improved employment opportunities for women by enhancing their working environment and flexibility. It increases the demand for cognitive skills, benefiting female workers. Labor-intensive sectors see significant

benefits from AI through improved productivity and efficiency. The study highlights the need for further research into AI's effects across diverse contexts, with a focus on policy implications like AI investment and education reforms.

The concept of "virtual agglomeration," enabled by technologies like big data and the Internet of Things, allows for complex industrial clusters and digital trade without the need for physical proximity. [7] This shift supports industrial upgrading, facilitates long-distance transactions, and encourages collaborative production. Digital platforms and cloud technology enable businesses to manage labor across vast distances, leading to more flexible and decentralized work arrangements.

The 4th Industrial Revolution is rapidly automating tasks, thereby displacing unskilled and semi-skilled workers. AI not only streamlines business operations by reducing time and cost but also exacerbates unemployment among workers who lack the skills to adapt to new job markets. By 2030, it is projected that AI will render 800 million people jobless worldwide. [8]

In Bangladesh, its unemployment rate averaged 3.78 percent from 1991 until 2023, reaching an all-time high of 5.30 percent in 2020, mainly due to COVID- 19, and a record low of 2.20 percent in 1991. [Source: World Bank] In 2022, it was 4.30 percent, and in 2023 it decreased to 4.20 percent. In this 4th Industrial Revolution, Bangladesh has faced this unemployment situation without automation and AI. Then, what will happen when automation and AI join here?

If we were to talk only about the IT sector of Bangladesh, over 4,500 IT/ITES firms are thriving here, employing over 750,000 ICT professionals. This number is increasing day by day. The use of AI has the potential to automate specific tasks, potentially leading to job displacement for workers who perform those tasks. [1] In recent years, many people in this sector are dependent on remote jobs. In this globalization, it is easier to get remote jobs. However, these remote jobs are shrinking due to the coming AI revolution and automation. AI reshapes job roles, requiring workers to acquire new skills like machine learning, data science, and software development. [9]

All systems can now perform complex tasks previously reserved for humans thanks to advances in machine learning, robotics, natural language processing, and data analytics. As AI advances, its effects on employment and workforce development,

Though AI automation makes work easier and it also helps save time, job polarization creates again the most significant question: How has the integration of AI in various sectors affected the demand for different types of jobs? What impact will the AI-driven technological changes have on traditional job sectors in Bangladesh? What skills are most needed for workers in the evolving job market due to AI and automation? How can workers in Bangladesh and other developing countries adapt to the changing labor market through skill development? How does AI influence economic inequality, particularly in the context of job displacement and job creation? What proactive measures can policymakers take to address the challenges posed by AI in the workforce?

AI reshapes job roles, requiring workers to acquire new skills like machine learning, data science, and software development. Rising demand for AI engineers, data scientists, and AI regulators. New job opportunities in AI-driven technologies like autonomous vehicles and automated e-commerce systems. [9]

The use of Al has the potential to automate specific tasks, potentially leading to job displacement for workers who perform those tasks. [1]

All systems can now perform complex tasks previously reserved for humans thanks to advances in machine learning, robotics, natural language processing, and data analytics.

As AI advances, its effects on employment and workforce development, including risks to certain job categories, opportunities for new roles, and socioeconomic effects on societies worldwide, are still being studied. Al changed modern workplace skills. Al increases worker autonomy but also job insecurity and lower benefits. [10]

3. OBJECTIVES

The primary objectives of this study are outlined as follows

I. To critically assess the impact of Artificial Intelligence (AI) on employment dynamics within Bangladesh's IT sector, particularly focusing on how job roles are shifting across

digital marketing, graphic design, web development, and freelancing.

II. To analyze AI's influence on worker productivity and operational efficiency, emphasizing how AI is reshaping the technical structure of capital and creating demand for high-level digital skills.

III. To examine AI-driven structural transformations in the digital economy, including the rise of virtual industrial clusters and remote work culture in Bangladesh.

IV. To investigate how AI contributes to reducing gender discrimination in employment, by analyzing AI-based recruitment and task allocation systems that promote fairness and inclusivity.

V. To propose strategic policy recommendations aimed at fostering inclusive and sustainable employment in an AI-driven job market, including upskilling initiatives and industry-academia partnerships.

4. METHEDOLOGY:

Research Design

This study adopted a quantitative research design to examine the impact of Artificial Intelligence (AI) on empowerment, employment and skill transformation in Bangladesh's IT sector, focusing on key sectors such as digital marketing, graphic design, web development, freelancing, CSE lecturers and students. The quantitative approach is chosen because it allows for the collection of numerical data, which can be analyzed to understand trends, relationships, and patterns in the opinions of professionals across different sectors.
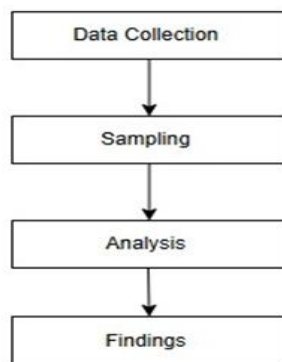

Fig 1: Workflow diagram

Sampling Method

This research uses a stratified purposive sampling method, where the population is divided into different groups based on their profession (such as digital marketers, graphic designers, web developers, freelancers, CSE lecturers, and students).

1. Stratified Sampling: The population was divided into four main sectors: digital marketing, graphic design, web development, and freelancing. Additionally, two more groups were included: CSE lecturers and students from these fields. Stratified sampling was used to make sure that each sector had enough participants, allowing for a clear comparison of differences between them.

2. Purposive Sampling: Within each sector, purposive sampling was used to select participants directly involved with AI. They were chosen based on their profession and experience (minimum one year of experience) to gather insights on how AI is changing jobs and skills.

Data Collection: Data was collected through an online survey with multiple-choice questions (MCQs) and a few open- ended questions to gather both numerical and descriptive data.The online survey was shared with professionals and students in the selected sectors through various platforms such as LinkedIn, Facebook, and academic networks.

A total of 100 responses were collected, which included:

- Digital marketers: 22
- Graphic designers: 18
- Web developers: 21
- Freelancers: 12
- CSE lecturers and students: 10 + 17

Data Analysis:
The collected data was analyzed using thematic analysis to identify key themes, patterns, and insights from both quantitative and qualitative responses:

Identifying Themes:
The responses were examined for recurring themes and patterns related to the impact of AI on different professional sectors. Key themes such as changes in job roles, required skills, and perceptions of AI were

identified and categorized to better understand how AI is influencing the workforce.

Pattern Recognition:
The analysis highlighted common trends and differences across the sectors, focusing on how professionals and students perceive AI's role in shaping their work. This helped to identify both positive and negative impacts of AI, as well as areas where skills are being most impacted.

Ethical Considerations:
Participants were told about the purpose of the study, and their consent was obtained before they took part. The collected data was kept private, and the identities of the respondents were hidden to ensure their privacy.

5. Result and Discussion

Here we ask some questions to almost 100 people from different platforms. That analysis helps us to continue the research. We categorize these in three charts.
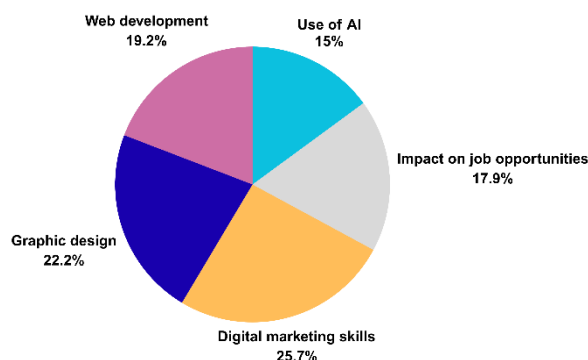
Chart 1: Result analysis of different categories.

From this chart 1, we want to show a part of our result analysis of different categories, like focusing on AI and digital skills. Here is an interpretation of each category based on this visual data:

1. **Use of AI (around 45%):** Approximately 45% of our respondents are using AI in their work or daily activities. This growing AI adoption is contributing to empowerment by helping professionals enhance their productivity and decision-making. It is also reshaping employment, creating new opportunities for AI specialists while transforming existing roles that now require AI knowledge. Additionally, it is driving

skill transformation, making it essential for professionals to learn AI-related skills such as machine learning, automation, and AI- powered tools. As businesses and freelancers increasingly rely on AI tools, acquiring AI- related skills becomes essential for staying competitive not only for the key sectors which we have discussed but also in the IT sector. Comparing this adoption rate with global trends can further highlight Bangladesh's position in the AI-driven job market.

2. **Impact on Job Opportunities (around 35%)**: Around 35% of the responses focus on how AI might affect job opportunities, showing concern about how AI and automation could either create new jobs or remove existing ones. This change could make the job market more competitive or divided, with some people finding new opportunities while others might lose their jobs. This change will likely push professionals to focus on skill transformation to remain employable in the evolving job market.

3. **Digital Marketing Skills (around 75%):** Around 75% of the responses highlight the importance of digital marketing skills, showing that it is seen as a crucial skill in the AI and digital economy. This trend reflects empowerment, as individuals with these skills are better equipped to succeed in a digital world. It also indicates a shift in employment, with digital marketing becoming a key area for job opportunities. As businesses increasingly rely on digital platforms, the demand for digital marketing expertise is growing, driving skill transformation and pushing professionals to develop these essential skills to stay competitive in the evolving job market.

4. **Graphic Design (around 65%):** Approximately 65% of the responses emphasize the importance of graphic design, indicating strong interest in creative digital skills. This suggests that visual communication and design are still highly valued in the AI-driven world. As businesses continue to rely on digital branding, marketing, and content

creation, graphic design plays a crucial role in shaping how brands communicate with their audience. This trend reflects the ongoing empowerment of creative professionals, as their skills become more essential in an increasingly digital and AI-powered economy, leading to opportunities for employment and skill transformation in the design field.

5. **Web Development (around 55%):** Around 55% of the responses are related to web development, highlighting the increasing demand for these skills as businesses and services transition to digital platforms. This reflects the ongoing empowerment of web developers, as they play a key role in the digital transformation. As AI continues to influence how websites are built and maintained, web developers will need to adapt to new tools and technologies, leading to skill transformation in this field. The growing demand for web development expertise also indicates that there will be employment opportunities for those who can keep up with the latest advancements in the field.

Here in chart 1, we have cleared that this research paper is written based on some key sectors of Bangladesh's IT sector.
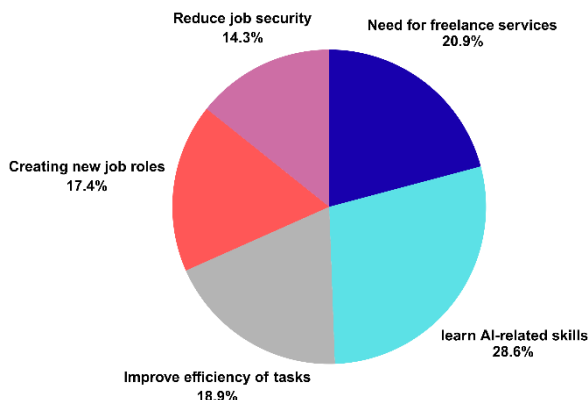
Chart 2: Key sectors of Bangladesh's IT sector.
From Chart 2, we want to represent another part of our result analysis with different categories concerning AI's impact on various areas. Here's a breakdown:

1. **Certain Skills Obsolete (around 45%):** Approximately 45% of the

responses suggest that certain skills are becoming outdated due to technological advancements or the implementation of AI. This indicates that tasks previously performed by people with these specific skills may now be replaced by automation and AI technologies. This trend reflects a shift in employment, as some roles become redundant while new ones emerge that require updated skills. It also highlights the need for skill transformation, as professionals must continuously adapt to stay relevant in an AI-driven world, ensuring their empowerment and employability in the evolving job market.

2. **Future of Employment (around 55%):** Around 55% of the responses express concerns about the future of employment, highlighting the potential impact of AI and automation on the job market. This suggests that there is significant attention on how these technologies could reshape the workforce, creating uncertainty and possibly leading to the need for new types of employment. The shift in employment trends reflects the growing importance of acquiring new skills to stay relevant in the evolving job market, while also pointing to the need for skill transformation and adaptation to technological advancements in the workplace.

3. **Learn and Integrate AI Tools (around 50%):** Approximately 50% of the responses emphasize the importance of learning and integrating AI tools into the workforce. This reflects the growing need for workers to adopt AI technologies to stay competitive and employable in the future. As AI continues to shape industries, it is essential for professionals to embrace these tools, enabling them to remain relevant in an AI-driven job market. This trend highlights the need for skill transformation, as individuals must continuously upgrade their skills to maintain empowerment and adapt to the changing employment landscape.

4. **Job Satisfaction (around 40%):** Around 40% of the responses relate to job satisfaction in the context of AI. This suggests that there are concerns about how AI might impact job satisfaction, either by changing job roles or introducing automation. For some workers, AI could enhance job satisfaction by making tasks easier or more efficient, while for others, it may lead to frustration or job displacement. This trend highlights the need for skill transformation, as workers will need to adapt to new tools and job expectations to ensure continued empowerment and satisfaction in an AI-driven work environment.

5. **Ethical Implications (around 45%):** Approximately 45% of the responses focus on the ethical implications of AI. This reflects concerns about issues like fairness, privacy, and the broader societal impact of AI on employment, equality, and moral considerations in the workplace. As AI becomes more integrated into various sectors, questions regarding its ethical use are increasingly important. These concerns highlight the need for guidelines and regulations that ensure AI is used in a way that promotes empowerment and fairness, while preventing harm or discrimination in the job market and society.

Overall, this chart summarizes perceptions or impacts of AI across several important areas related to employment, skills, and ethics, showing significant interest and concern in each of these domains.
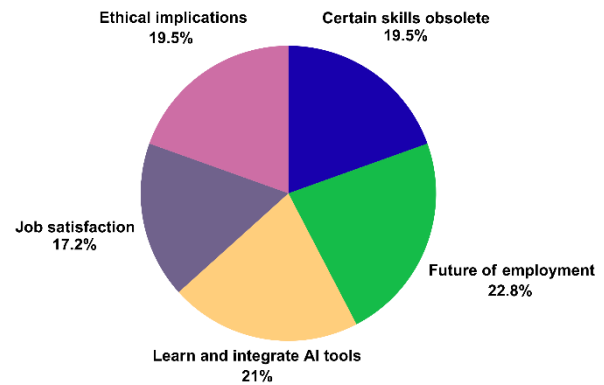
Chart 3: Perspectives related to AI, freelancing, and job security.

Chart 3, illustrates the last part of our result analysis on different impacts or perspectives related to AI, freelancing, and job security. Here's a breakdown of the categories:

1. **Need for Freelance Services (around 65%):** Around 65% of the respondents express a need for freelance services. This reflects a significant demand for freelancers, likely driven by the flexibility and specialized skills that freelancers offer. In an AI and automation-driven digital economy, the ability to work independently and adapt to different projects is highly valued. This trend highlights the growing importance of freelance work, which offers both empowermentand employment opportunities, as businesses seek agile, skilled professionals to meet their evolving needs. It also points to a potential shift in skill transformation, where freelancers may need to continuously update their skills to stay competitive in a fast-changing environment.

2. **Learn AI-Related Skills (around 85%):** Around 85% of the responses emphasize the need to learn AI-related skills. This highlights the growing recognition that acquiring AI skills is essential for workers to remain relevant and competitive as AI technologies continue to transform various industries. As AI reshapes the job market, professionals need to continuously develop their skills to ensure their empowerment and employment in an increasingly AI-driven world. This trend underscores the

importance of skill transformation to adapt to the evolving demands of the digital economy.

3. **Improve Efficiency of Tasks (around 60%):** Around 60% of the responses focus on improving the efficiency of tasks. This suggests that many believe AI will significantly boost productivity by automating routine tasks, leading to faster and more efficient work processes. By integrating AI tools, businesses and professionals can streamline their operations, reducing the time and effort required for repetitive tasks. This improvement in efficiency not only contributes to empowerment in the workplace but also fosters skill transformation, as workers will need to adapt to new, AI-driven methods to stay competitive in an evolving job market.

4. **Creating New Job Roles (around 50%):** Around 50% of the responses focus on creating new job roles. This suggests that while AI might replace some traditional jobs, there is optimism about the emergence of new positions that will require different skill sets, particularly in technology-related fields. As AI continues to evolve, it will drive the need for specialized roles such as AI developers, data scientists, and AI trainers. This shift reflects both employment opportunities and a demand for skill transformation, as workers will need to adapt to these new roles to remain empowered and competitive in an AI-driven job market.

5. **Reduce Job Security (around 40%):** Around 40% of the responses reflect concerns about AI reducing job security. While there are new opportunities emerging, this indicates apprehension that automation might lead to job layoffs, especially for roles that can be easily automated. Workers in such roles may face the risk of losing their jobs as AI takes over tasks that were previously performed by humans. This highlights the need for empowerment through skill transformation, as workers will need to update their skills to remain relevant and secure in an increasingly automated job

market.
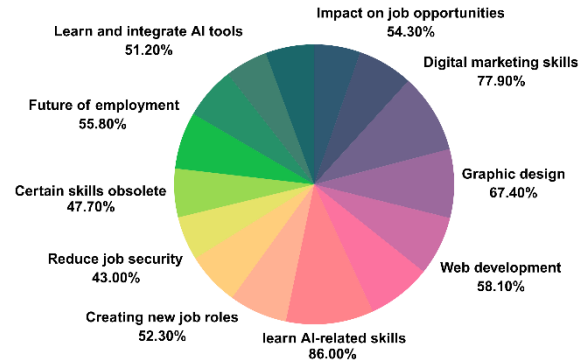
Chart 4: Summarizing AI's impact on employment and skills

In the pie chart summarizing AI's impact on employment and skills, the largest focus is on the importance of learning AI-related skills (10.1%), with significant emphasis on fields such as digital marketing (9.2%), graphic design (7.9%), and web development (6.8%). These areas indicate a strong shift towards digital and AI-enhanced skills in the workforce. The chart also highlights the rising demand for freelance services (7.4%) and the potential for AI to improve task efficiency (6.7%), which are seen as vital for adapting to the AI-driven economy.

There are also concerns about the future of employment (6.6%) and how AI could impact job opportunities (6.4%), with some optimism about the creation of new job roles (6.2%). A key focus is the learning and integration of AI tools (6%), which is considered essential for staying competitive. At the same time, there are concerns about certain skills becoming obsolete (5.6%), the ethical implications (5.6%) of AI, and a potential reduction in job security (5.1%) due to AI's increasing role in the workplace. These findings collectively reflect both the opportunities and challenges posed by AI in the employment landscape.

Overall, the chart provides a snapshot of how AI is reshaping the job market, creating both opportunities and challenges across various sectors.

6. FINDINGS:

i. **AI Adoption and Skill Transformation:** Around 45% of respondents show growing

interest in AI adoption, highlighting its increasing role in various sectors. This trend is enhancing productivity and driving skill transformation, with workers in fields like digital marketing, graphic design, and web development focusing on acquiring AI-related skills to stay competitive.

ii. **Impact on Employment:** AI is creating both opportunities and challenges in employment. Around 35% of respondents are concerned about AI's impact on job opportunities, with AI potentially creating new roles or replacing existing ones. The growing demand for freelance services (around 65%) highlights a shift toward more flexible work in the AI-driven digital economy.

iii. **Future of Employment:** Around 55% of respondents are concerned about the future of employment, as AI and automation transform industries. While some roles may disappear, new positions requiring specialized AI skills are emerging, reflecting a shift in the labor market.

iv. **AI's Role in Efficiency:** Around 60% of respondents believe AI will boost task efficiency, speeding up work processes and reducing repetitive tasks, which empowers workers to focus on more strategic, high-value activities.

v. **Job Security Concerns:** Around 40% of responses indicate concerns over reduced job security due to AI. The possibility of automation replacing human workers in certain roles is a key concern, particularly for jobs that can be easily automated. This highlights the need for workers to continuously update their skills to remain relevant and secure in the workforce.

vi. **Creation of New Job Roles:** Around 50% of respondents are optimistic about the creation of new job roles as AI increases demand for specialized skills like AI developers, data scientists, and automation specialists, offering new opportunities for those who adapt.

vii. **Learning AI Tools:** Around 50% of participants highlight the need to learn and integrate AI tools to stay competitive, stressing the importance of skill transformation as AI becomes more integrated across industries.

viii. **Ethical and Societal Concerns:** Approximately 45% of respondents are concerned about AI's ethical implications, including fairness, privacy, and its impact on employment and equality. These issues need to be addressed for responsible AI adoption.

The findings highlight a clear trend toward the empowerment of workers through the acquisition of AI-related skills and the transformation of employment patterns. While there are concerns about job security and obsolete skills, the creation of new job roles and the need for continuous learning present opportunities for those willing to adapt. The growing demand for freelance services, AI integration, and task efficiency improvements further reflects the ongoing changes in the job market due to AI. These shifts call for a focus on skill transformation to remain competitive and secure in the future workforce.

7. RECOMENDATIONS:

a. Inclusive Employment Analyses
Firstly we have to improve our understanding of employment dynamics, in this case we should expand research to include populous Asian countries like Bangladesh and collaborate with some local universities for relevant data. By using advanced analytics and surveys, we can capture real-time employment trends and the impacts of technology across various regions and sectors.

b. Adaptation to Technological Advancements
Here we need to create flexible employment policies to keep up with rapid technological changes, including safety nets for those workers who are affected by automation. Additionally, encouraging investment in different sectors that utilize remittances can help generate jobs and develop skills, particularly in digital services and local entrepreneurship. Which can be beneficial for the economics of a country.

c. Mitigating Job Polarization
To address job polarization, we should launch targeted reskilling programs that are focused on mid-level skills and promote vocational training that connects high- and low-skilled jobs. Additionally, creating innovation hubs will help mid-level workers gain new skills and explore entrepreneurial opportunities, especially in technology sectors.

d. Addressing Technological Integration Challenges
In this present world, By tackling challenges in technology integration, we should establish ethical guidelines that prioritize worker well-being and ensure companies consider the human impact of new technologies. Additionally, promoting collaboration among governments, businesses, and civil society can

help address the ethical issues related to automation and job displacement.

e. Preparing for Future Employment Trends

To prepare the future employment trends, we should promote economic diversification to lessen reliance on industries at risk from automation, investing in growth sectors like renewable energy and digital economies that can play a vital role in their economy. Additionally, we need regulatory bodies to monitor AI developments, ensuring technology supports rather than replaces human workers.

f. Fostering Skills Development

To foster skills development, we should implement lifelong learning programs that promote ongoing skill enhancement, especially in AI and digital technologies. Additionally, forming partnerships between governments and private sectors can help create training programs aligned with the skills needed in the evolving job market.

g. Encouraging Entrepreneurship

To encourage entrepreneurship, we should provide some resources and support for startups, especially those started by displaced workers, to foster job creation and innovation. Additionally, we need to make financial support options, like micro-loans and grants, easily accessible for individuals starting new ventures due to their job loss.

h. Public Awareness and Advocacy

Encouraging public awareness campaigns about AI's potential impact on employment will help prepare the workforce for the future. This could also include initiatives to promote AI literacy among workers, businesses, and educational institutions.

8. FUTURE SCOPES

This study opens multiple avenues for future research and development:

a. **Sectoral Expansion:** Future studies can expand the analysis beyond IT to include sectors like healthcare, education, or agriculture to assess AI's broader impact on employment and empowerment.

b. **Longitudinal Studies:** Conducting follow-up research over time could help track how AI-

related skill transformation evolves and whether AI policies introduced at the national level lead to measurable employment shifts.

c. **Gender & Social Equity:** Further investigation into how AI affects marginalized communities, such as rural workers or women in non-IT roles, would help refine inclusive technology policies.

d. **AI Education Integration:** Future work may explore curriculum development and AI training programs at secondary and tertiary levels to ensure sustainable digital literacy.

e. **Policy Simulation Models:** Developing AI policy impact simulations (e.g., skill-upgrading subsidies or AI taxation models) could help predict real-world employment outcomes more accurately.

9. CONCLUSION

AI is reshaping employment and empowerment in Bangladesh, bringing both opportunities and challenges. Rapid growth in digital sectors like marketing, graphic design, and web development reflects the rising demand for AI-related skills, while the expansion of freelancing and the gig economy highlights new income opportunities. However, AI-driven automation raises concerns about job displacement, particularly in traditional sectors, making skill adaptation and workforce reskilling essential. AI adoption also brings ethical and job security concerns—while it creates new roles, it risks marginalizing those unable to transition. The rise of digital industrial clusters is generating employment, and AI has the potential to reduce gender discrimination through unbiased hiring, but these benefits must be reinforced with education reform, skill development programs, and social protections to support both high- and low-skilled workers. AI's social impact in Bangladesh presents both opportunities and risks, as it can expand job access for marginalized communities, yet unequal access to technology may deepen existing disparities. Although AI can help reduce workplace gender bias, biased algorithms pose challenges, and economic displacement is inevitable, making targeted retraining crucial for vulnerable groups. To maximize AI's benefits, Bangladesh must adopt strategic policies, promote responsible AI

deployment, and build an inclusive job market that ensures long-term workforce adaptability.

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11. Appendix

A: Survey:

Here we have provided our survey questions as samples from 100 responses.

i. How familiar are you with the use of AI in your field (e.g., digital marketing, graphic design, web development, freelancing)?

ii. Do you believe AI will positively or negatively impact job opportunities in your field over the next 5 years?

iii. How do you perceive the impact of AI on the demand for digital marketing skills?

iv. In your experience, has AI automation (e.g., AI design tools) affected your workload or the quality of projects in graphic design?

v. Do you believe AI will automate significant aspects of web development, such as coding and site design?

vi. Do you think AI will create more opportunities for remote work, or will it reduce the need for freelance services?

vii. How has AI improved the efficiency of tasks in your profession (e.g., automating repetitive tasks, enhancing productivity)?

viii. Have you observed AI creating new job roles or opportunities in your field?

ix. Do you worry that AI will replace your current role or reduce job security in your field?

x. Overall, how do you view the future of employment in your field with the rise of AI?

xi. How challenging has it been for you to learn and integrate AI tools into your work processes?

xii. Are you concerned about any ethical implications of AI in your field (e.g., bias in AI algorithms, job displacement)?

xiii. What AI-related skills do you believe will be crucial for your continued success in the next 5 years?

B: Raw Data Table (Selected Responses):

Here we have shown 10 responses as example from 100 responses.

Sl No.	Respondent Name	Sector	AI Familiarity	Importance of AI Skills	Efficiency Improvement	New Job Roles	Skills Becoming Obsolete	Crucial Future AI Skills
1	Nayan Mondal	Web Development	Somewhat familiar	Very important	Slightly improved	A few new roles	No, skills will remain relevant	1. Promote Engineering 2. Data visualization
2	Abu Sayeed	SWE	Very familiar	Somewhat important	Slightly improved	Yes, many new roles	Yes, many skills	Yes
3	MD SK Omor	Graphic Designer	Somewhat familiar	Very important	Significantly improved	No new roles observed	Yes, many skills	Use AI efficiently
4	Jahed Sardar	CSE	Somewhat familiar	Very important	Significantly improved	Yes, many new roles	Yes, many skills	Programming
5	Nasir Uddin	Freelancer	Somewhat familiar	Somewhat important	Slightly improved	Yes, many new roles	Some skills	Slightly skills
6	Mushfiqur R. Mahim	CSE	Very familiar	Somewhat/Not important	Slightly improved	Yes, many new roles	Some skills	ChatGPT
7	Yasir Arafat Ratul	Freelancer	Somewhat familiar	Somewhat important	Slightly improved	Yes, many new roles	Some skills	Prompt engineering skills
8	Kazi Shahadat Dinat	SWE	Very familiar	Very important	Significantly improved	Yes, many new roles	Yes, many skills	Critical Thinking and Problem-Solving
9	Raihan Uddin	MCT	Very familiar	Very important	No improvement	A few new roles	Yes, many skills	Yes, it will be
10	Shakil Hossain	Digital Marketer	Not familiar at all	Very important	Slightly improved	A few new roles	No, skills will remain relevant	Maybe