

The Impact of Artificial Intelligence Literacy on Employee Productivity and Organizational Success: Evidence from Bangladesh's Higher Education Institutions

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Abstract

Artificial Intelligence (AI) is transforming higher education by reshaping teaching, learning, research, and administrative processes worldwide. In Bangladesh, universities are increasingly adopting AI-based technologies such as learning management systems, automated assessment tools, generative AI platforms, and data-driven decision-making systems. However, successful AI integration depends on employees' Artificial Intelligence Literacy (AIL), which represents the knowledge, skills, and competencies required to understand, utilize, and critically evaluate AI applications. This study investigates the relationship between AI literacy, employee productivity, and organizational success in Bangladesh's higher education institutions. A quantitative research approach is proposed using a structured survey of faculty members and administrative staff from selected public and private universities. The study examines AI literacy as the independent variable, employee productivity as the mediating variable, and organizational success as the dependent variable. Data will be analyzed through descriptive statistics, correlation analysis, and Structural Equation Modeling (SEM) to test the proposed hypotheses. The study expects that higher AI literacy will enhance employee productivity by improving efficiency, innovation, and decision-making capabilities, thereby contributing to organizational success. Findings will support the development of AI training programs and digital capacity-building strategies for higher education institutions. This research contributes to AI adoption literature by emphasizing human capabilities in transformation.

Keywords: Artificial Intelligence literacy, employee productivity, organizational success, higher education institutions, AI adoption, digital transformation, AI competencies

Introduction:

Artificial Intelligence (AI) has become a transformative force in higher education, reshaping how institutions deliver teaching, manage administration, and enhance research productivity (Davenport & Ronanki, 2018; Johnson et al., 2024). Globally, universities are increasingly integrating AI-driven tools such as intelligent tutoring systems, automated assessment platforms, predictive analytics, and generative AI applications to improve efficiency and decision-making processes (Zawacki-Richter et al., 2019; Holmes et al., 2019). This rapid digital transformation has shifted the focus of higher education institutions from traditional ICT adoption toward AI-enabled ecosystems that require new forms of digital competence among employees (Johnson et al., 2024; Jordan & Mitchell, 2015). In this context, Artificial Intelligence

Literacy (AIL)—defined as the ability to understand, use, evaluate, and ethically engage with AI systems—has emerged as a critical competency for academic and administrative staff (Long & Magerko, 2020; Jarrahi et al., 2023).

The relationship between Artificial Intelligence Literacy (AIL), employee productivity, and organizational success can be explained through several established theoretical perspectives (Davenport & Ronanki, 2018). The Technology Acceptance Model (TAM) suggests that individuals' perceived usefulness and ease of use significantly influence their acceptance of new technologies (Davis, 1989; Drucker, 1999; Kaplan & Norton, 1996). In the context of AI in higher education, employees with higher AI literacy are more likely to perceive AI tools as useful and easy to use, which in turn enhances their willingness to integrate such tools into daily academic and administrative tasks (Alam et al., 2023). This increased acceptance ultimately improves productivity at the individual level. Similarly, the Unified Theory of Acceptance and Use of Technology (UTAUT) emphasizes that performance expectancy and facilitating conditions play key roles in technology adoption (Venkatesh et al., 2003). AI literacy strengthens performance expectancy by enabling employees to understand how AI tools enhance job efficiency, reduce workload, and improve decision-making processes (Akhter & Mahmood, 2022). When combined with adequate institutional support, AI-literate employees are more likely to adopt AI technologies effectively, thereby improving organizational performance outcomes. From a human capital perspective, employees' knowledge and skills are critical drivers of organizational success (Dwivedi et al., 2019). AI literacy can be considered a modern extension of digital human capital, where individuals' ability to interact with advanced technologies determines institutional efficiency and competitiveness (Brynjolfsson & McAfee, 2017). In higher education institutions, where knowledge creation and dissemination are core functions, AI literacy becomes especially important in optimizing teaching effectiveness, research productivity, and administrative efficiency (Davenport & Ronanki, 2018; Dwivedi et al., 2019).

Globally, higher education institutions are increasingly embedding AI into academic and administrative ecosystems (Dwivedi et al., 2019). Universities in developed countries have adopted AI-driven systems for adaptive learning, automated grading, plagiarism detection, student performance prediction, and administrative workflow optimization (Holmes et al., 2019). For instance, AI-powered learning analytics identify at-risk students and provide personalized academic support, improving retention and graduation rates (Zawacki-Richter et al., 2019). However, despite these advancements, research highlights a critical gap between technology adoption and human capability development. Many institutions invest heavily in AI infrastructure but fail to prepare staff to use these technologies effectively adequately (OECD, 2021; UNESCO, 2023). This gap emphasizes the importance of AI literacy as a foundational skill for ensuring that technological investments translate into meaningful productivity gains. In addition, UNESCO (2021) emphasizes that ethical understanding of AI, including transparency, bias awareness, and responsible use, is essential for educators. This highlights that AI literacy is not limited to technical skills but also includes critical thinking and ethical awareness in technology use.

In Bangladesh, the higher education sector is undergoing gradual digital transformation driven by government initiatives such as Digital Bangladesh and increasing access to internet-based educational tools (Akhter & Mahmood, 2022; World Bank, 2022). Universities are adopting Learning Management Systems (LMS), online examination platforms, and AI-supported academic tools. However, the level of AI literacy among faculty and administrative

staff remains inconsistent due to limited training, infrastructure gaps, and unequal access to digital resources (Al-Amin et al., 2021). As a result, the potential benefits of AI adoption are not fully realized in many institutions. In Bangladesh, higher education institutions are experiencing gradual but uneven digital transformation. Public and private universities have begun integrating Learning Management Systems (LMS), online assessment tools, and AI-assisted academic platforms (Akhter & Mahmood, 2022; Alam et al., 2023). However, the level of AI literacy among faculty members and administrative staff varies significantly across institutions due to disparities in training, infrastructure, and institutional support (Islam & Grönlund, 2016; World Bank, 2022). Government initiatives such as Digital Bangladesh Vision 2041 have accelerated ICT adoption in education, but AI integration is still in its early stages (Alam et al., 2023). Many universities continue to rely on traditional teaching and administrative methods, with limited use of advanced AI-based tools (Marangunić & Granić, 2015). Even when AI tools are available, a lack of training often prevents employees from fully utilizing them, resulting in underperformance and inefficient workflows (Al-Amin et al., 2021). Furthermore, the COVID-19 pandemic exposed both opportunities and weaknesses in Bangladesh's digital education system. While institutions rapidly adopted online learning platforms, many educators struggled with digital tools due to insufficient technical skills. This experience highlighted the urgent need to develop AI literacy as part of professional development programs for academic staff (Rahman et al., 2020).

Organizational success in higher education institutions is typically measured through multiple dimensions, including academic quality, research output, student satisfaction, administrative efficiency, and institutional reputation (Kong et al., 2021; Ng et al., 2021). Employee productivity plays a central role in achieving these outcomes, as faculty and administrative staff directly influence teaching effectiveness and operational efficiency (Ng et al., 2021). AI tools can significantly enhance productivity by automating repetitive tasks, improving data analysis, and supporting decision-making processes. For example, automated grading systems reduce workload for instructors, while AI-based analytics help administrators make data-driven decisions regarding enrollment, resource allocation, and performance evaluation. However, these benefits are only fully realized when employees possess adequate AI literacy. Without sufficient understanding, AI systems may be underutilized or misused, leading to inefficiencies and resistance to adoption (World Bank, 2022). Therefore, AI literacy acts as a critical enabler that bridges the gap between technological availability and organizational performance outcomes.

Despite growing interest in digital transformation, existing literature in Bangladesh primarily focuses on general ICT adoption, e-learning systems, and online education during and after the COVID-19 pandemic (Rahman et al., 2020). Limited empirical research specifically investigates Artificial Intelligence Literacy and its direct impact on employee productivity and organizational success in higher education institutions (Ng et al., 2023). Moreover, most prior studies emphasize student outcomes rather than institutional or employee-level performance. This creates a significant research gap in understanding how AI literacy among university employees contributes to organizational effectiveness in developing country contexts such as Bangladesh. This study focuses on Bangladesh's higher education sector, including both public and private universities. It examines faculty members and administrative employees who are increasingly exposed to AI tools in teaching, learning management, grading, communication, and institutional planning. The scope is limited to higher education institutions because they represent the most active environment for AI integration in Bangladesh, particularly in urban and

semi-urban universities where digital transformation is accelerating (Islam & Grönlund, 2016). The primary purpose of this study is to examine the impact of AI literacy on employee productivity and organizational success in Bangladesh's higher education institutions. Specifically, it investigates how employees' ability to understand and effectively use AI tools influences their efficiency, task performance, and contribution to institutional outcomes. Furthermore, the study explores whether enhanced productivity mediates the relationship between AI literacy and organizational success, thereby providing a comprehensive model of AI-driven institutional performance.

Objectives:

- i. To examine the level of Artificial Intelligence Literacy among employees in Bangladesh's higher education institutions.
- ii. To analyze the impact of Artificial Intelligence Literacy on employee productivity in higher education institutions in Bangladesh.
- iii. To investigate the relationship between employee productivity and organizational success in higher education institutions in Bangladesh.
- iv. To assess the mediating role of employee productivity in the relationship between Artificial Intelligence Literacy and organizational success.

Research Questions:

- i. What is the level of Artificial Intelligence Literacy among employees in Bangladesh's higher education institutions?
- ii. How does Artificial Intelligence Literacy affect employee productivity in higher education institutions in Bangladesh?
- iii. What is the relationship between employee productivity and organizational success in Bangladesh's higher education institutions?
- iv. Does employee productivity mediate the relationship between Artificial Intelligence Literacy and organizational success in higher education institutions?

Literature Review:

Artificial Intelligence (AI) has become a transformative force in higher education, reshaping teaching, learning, research, and administrative operations (Brynjolfsson et al., 2023). The integration of AI technologies such as machine learning systems, learning analytics, automated assessment tools, and generative AI has created new demands for workforce competencies, particularly Artificial Intelligence Literacy (AIL) (Chen et al., 2020). AIL refers to the ability of individuals to understand, apply, evaluate, and critically engage with AI systems in professional settings (Long & Magerko, 2020). This literature review explores theoretical foundations and practical applications of AI literacy in higher education, with a focus on employee productivity and organizational success. The Technology Acceptance Model (TAM) explains how users come to accept and use technology based on perceived usefulness and perceived ease of use (Davis, 1989; Becker, 1993)). In higher education, employees with higher AI literacy are more likely to perceive AI tools as useful for improving teaching efficiency and administrative tasks. This perception increases adoption rates and ultimately enhances productivity (Crompton & Burke, 2023).

The UTAUT framework emphasizes performance expectancy, effort expectancy, social influence, and facilitating conditions as determinants of technology adoption (Venkatesh et al., 2003). AI literacy strengthens performance expectancy by enabling employees to understand how AI improves job outcomes, thereby increasing usage behavior in institutional contexts (European Commission, 2020). Human Capital Theory posits that education, skills, and knowledge enhance worker productivity and economic performance (Becker, 1964). AI literacy can be considered a modern form of human capital that enhances employees' ability to perform tasks efficiently in AI-driven environments (Floridi & Cowls, 2019). Digital literacy frameworks emphasize the ability to access, evaluate, and use digital technologies effectively (Gilster, 1997; Floridi & Cowls, 2019). Expanding this concept, AI literacy includes understanding AI systems, recognizing limitations, and applying ethical considerations (Long & Magerko, 2020). This theoretical evolution highlights the increasing importance of AI competencies in modern workplaces.

Globally, universities are increasingly adopting AI tools for teaching and administrative purposes. AI-powered learning analytics help educators identify student performance patterns, while automated grading systems reduce workload and increase efficiency (Holmes et al., 2019). Additionally, AI chatbots and virtual assistants are being used to support student services and administrative communication. However, the effectiveness of these technologies depends heavily on employee readiness and literacy. Studies show that insufficient AI literacy leads to underutilization of advanced systems, limiting their potential benefits (OECD, 2021). Therefore, workforce capability development is essential for maximizing AI benefits in higher education institutions. Employee productivity refers to the efficiency and effectiveness with which individuals perform their job tasks. In higher education institutions, productivity includes teaching effectiveness, research output, and administrative efficiency. AI tools enhance productivity by automating repetitive tasks, improving data analysis, and supporting decision-making processes (Brynjolfsson & McAfee, 2017).

Organizational success in universities is measured through academic performance, research output, student satisfaction, and institutional reputation. Research indicates that higher employee productivity directly contributes to improved organizational outcomes (Drucker, 1999). Therefore, AI literacy indirectly contributes to organizational success by improving productivity levels. Globally, developed countries have integrated AI into higher education systems to improve institutional performance. For example, AI-based adaptive learning platforms and predictive analytics are widely used in universities in the United States, Europe, and East Asia. These systems enhance learning outcomes and administrative efficiency (Luckin et al., 2016). Despite technological advancements, a significant gap remains between AI adoption and workforce capability. Many institutions invest in AI infrastructure but fail to provide adequate training to employees, limiting the effectiveness of AI implementation (UNESCO, 2021). This highlights the importance of AI literacy programs for academic and administrative staff. Studies suggest that employees with higher AI literacy demonstrate stronger adaptability to technological change, improved problem-solving skills, and higher confidence in using emerging technologies (Ng et al., 2021). These capabilities translate into greater task efficiency and reduced cognitive workload, which are essential components of employee productivity. In contrast, employees with limited AI literacy often experience technological anxiety, resistance to adoption, and inefficient use of AI tools, which negatively affects institutional performance.

Furthermore, AI literacy enhances critical thinking in technology use. Educators and administrators who understand AI systems are better equipped to identify biases, errors, and limitations in automated outputs. This ensures more responsible and effective use of AI technologies in institutional decision-making processes (Williamson, 2021). As a result, AI literacy is increasingly recognized not only as a technical skill but also as a strategic organizational competency. Empirical studies consistently demonstrate that AI integration can significantly enhance employee productivity in higher education institutions. AI-based systems streamline administrative processes such as student registration, attendance tracking, grading, and performance monitoring. These automation processes reduce time-consuming manual tasks and allow faculty members to focus more on teaching quality and research activities (Jarrahi, 2018). In teaching environments, AI tools such as adaptive learning platforms and intelligent tutoring systems personalize educational content based on student performance data (Robbins & Judge, 2019). This reduces instructional workload while improving learning outcomes. Additionally, AI-powered analytics assist faculty and administrators in making data-driven decisions, which improves efficiency and institutional responsiveness (Kshetri, 2021).

However, research also indicates that the productivity benefits of AI are not automatic. Organizations must ensure that employees possess adequate AI literacy to effectively utilize these tools. Without sufficient understanding, AI systems may be misinterpreted or underused, limiting their intended benefits (OECD, 2021). This reinforces the argument that human capability development is a prerequisite for successful AI integration. Existing literature reveals several gaps. First, most studies focus on ICT adoption rather than AI literacy as a distinct construct. Second, limited research examines AI literacy's impact on employee productivity in higher education settings. Third, there is a lack of empirical evidence from developing countries like Bangladesh. Finally, few studies incorporate mediating mechanisms such as employee productivity to explain how AI literacy translates into organizational success. Organizational success in higher education institutions is increasingly defined by their ability to adapt to digital transformation and maintain competitiveness in a globalized education market. Traditional indicators such as academic output and student enrollment are now complemented by digital performance metrics, including technology adoption rates, administrative efficiency, and digital service quality (Selwyn, 2019).

AI-driven institutions tend to achieve higher levels of operational efficiency and strategic decision-making capability (Aoun, 2017). For example, predictive analytics can support enrollment planning, resource allocation, and student retention strategies. These improvements contribute directly to institutional performance and sustainability (West, 2018). Nevertheless, organizational success is not solely determined by technology availability but also by the readiness and competence of human resources (Alenezi, 2023). Employees with higher AI literacy are more likely to align institutional goals with technological capabilities, ensuring smoother implementation of AI systems (Alharbi & Drew, 2014). Therefore, organizational success in the AI era depends on the integration of both technological infrastructure and human capital development. In developing countries such as Bangladesh, the adoption of AI in higher education faces several structural and contextual challenges. Limited digital infrastructure, insufficient funding, and uneven access to technology hinder effective implementation of AI systems across institutions (Islam & Grönlund, 2016). Additionally, disparities between urban and rural institutions create unequal opportunities for AI adoption.

Another major challenge is the lack of structured training programs focused on AI literacy. While ICT training is relatively common, AI-specific professional development remains

limited. As a result, many faculty members and administrative staff are not adequately prepared to engage with AI-driven systems effectively (Al-Amin et al., 2021). Cultural factors also play a role in technology adoption. Resistance to change, fear of job displacement, and lack of awareness about AI benefits can slow down adoption processes (Government of Bangladesh, 2021). These challenges highlight the importance of developing targeted capacity-building programs that focus on improving AI literacy among higher education employees in Bangladesh. In Bangladesh, higher education institutions are undergoing gradual digital transformation (Government of Bangladesh, 2021). Public and private universities are increasingly adopting Learning Management Systems (LMS), online examinations, and digital administrative tools (Hossain et al., 2022). However, AI integration remains limited and uneven across institutions (Islam & Grönlund, 2016). The government's "Digital Bangladesh" initiative has improved ICT infrastructure, but AI-specific training for academic staff is still in its early stages (Uddin et al., 2023). Many educators lack the necessary skills to effectively use AI-based tools, resulting in underutilization of available technologies (Al-Amin et al., 2021). This skill gap reduces potential productivity gains and limits institutional performance improvements.

Overall, the literature indicates a strong relationship between AI literacy, employee productivity, and organizational success. Theoretical frameworks such as TAM, UTAUT, and Human Capital Theory consistently suggest that knowledge and skills are critical determinants of technology adoption and performance outcomes (Ifenthaler & Yau, 2020). Empirical studies further confirm that AI tools can significantly enhance efficiency and decision-making in higher education institutions. However, the literature also highlights a clear gap between technology adoption and human capability readiness. While AI systems are increasingly available, their effectiveness depends on users' ability to understand and apply them appropriately. This gap is particularly evident in developing countries, where limited training and infrastructural constraints hinder effective AI utilization. Therefore, improving AI literacy among higher education employees is essential for maximizing the benefits of AI integration. It not only enhances individual productivity but also contributes to broader institutional success and competitiveness.

Artificial Intelligence Literacy has emerged as a critical factor influencing employee productivity and organizational success in higher education institutions (Ifenthaler & Yau, 2020; Akgün & Greenhow, 2022). While global research highlights the transformative potential of AI, there remains a significant need to understand how human competencies shape its effectiveness, particularly in developing country contexts such as Bangladesh (Al-Amin et al., 2021). This study addresses this gap by examining the role of AI literacy in enhancing employee productivity and institutional performance in Bangladeshi universities. By integrating theoretical and practical perspectives, it provides a comprehensive foundation for understanding AI-driven transformation in higher education (Ahmad et al., 2023).

Although Artificial Intelligence (AI) is increasingly being integrated into higher education systems worldwide, there remains a limited understanding of how Artificial Intelligence Literacy (AIL) among employees influences productivity and organizational success, particularly in developing country contexts such as Bangladesh. Most existing studies on AI in education focus primarily on technological applications, system performance, and student learning outcomes, rather than examining the competencies of academic and administrative staff who are the actual users of AI systems (Zawacki-Richter et al., 2019; Holmes et al., 2019). A second major gap in the literature is the dominance of research conducted in developed countries. These contexts often have advanced digital infrastructure,

strong institutional support, and structured AI training programs. As a result, findings from such environments may not be fully transferable to developing countries where digital inequality, resource constraints, and limited training opportunities significantly affect AI adoption and usage (OECD, 2021). In Bangladesh, for example, AI integration in higher education is still in an early stage, and employee readiness remains uneven across institutions (Al-Amin et al., 2021).

Third, most existing studies in Bangladesh focus broadly on ICT adoption, e-learning systems, or online education experiences, especially during the COVID-19 pandemic. However, there is a clear lack of empirical research specifically examining AI literacy as a distinct construct and its impact on workplace outcomes in higher education institutions. This creates a conceptual gap in understanding how AI-specific competencies differ from general digital literacy in influencing employee performance. Finally, existing models rarely consider the mechanism through which AI literacy translates into organizational success. In particular, the role of employee productivity as a mediating variable is often overlooked. Without this mediating pathway, it becomes difficult to explain how individual-level competencies contribute to institutional-level outcomes.

Significance:

There is a significant gap in the existing literature regarding the role of Artificial Intelligence Literacy (AIL) in higher education, particularly in developing countries like Bangladesh. While previous studies have extensively examined AI technologies and their applications in education, most have focused on system implementation, student learning outcomes, and general ICT adoption rather than the competencies of employees who directly use these technologies. In addition, there is limited empirical evidence explaining how AI literacy influences employee productivity and, in turn, contributes to organizational success in higher education institutions. Existing research in Bangladesh largely overlooks AI literacy as a distinct construct and rarely investigates the mechanism through which it affects institutional performance, particularly the mediating role of employee productivity. As higher education institutions in Bangladesh increasingly adopt AI-based tools, there is a growing need to understand whether employees possess the necessary skills to use these systems effectively and how this affects overall institutional outcomes. Therefore, this study is undertaken to address this gap by examining the impact of AI literacy on employee productivity and organizational success in Bangladeshi higher education institutions, while also contributing to the theoretical development of human capital and technology adoption frameworks and providing practical insights for improving AI-related training and policy development in universities.

Methodology:

Research Design: This study will employ a quantitative research design to examine the relationship between Artificial Intelligence Literacy (AIL), employee productivity, and organizational success in Bangladesh's higher education institutions. A quantitative approach is selected because it allows for statistical testing of relationships among variables and provides generalizable findings across different universities. The study will follow a cross-sectional survey design, where data will be collected at a single point in time from faculty members and administrative employees.

Population and Sampling: The population of the study consists of academic and administrative staff working in both public and private universities in Bangladesh. Since it is not feasible to cover all universities, a sample will be selected using a stratified random sampling technique to ensure representation from both public and private institutions. Within each stratum, respondents will be selected randomly. The estimated sample size will range between 250–400 respondents, which is considered adequate for Structural Equation Modeling (SEM) analysis.

Data Collection Method: Primary data will be collected using a structured questionnaire. The questionnaire will be distributed both online (Google Forms) and physically where possible. The instrument will consist of closed-ended questions measured using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire will be divided into four sections:

- i. Demographic information (age, gender, institution type, job role)
- ii. Artificial Intelligence Literacy (independent variable)
- iii. Employee Productivity (mediating variable)
- iv. Organizational Success (dependent variable)

Measurement of Variables:

- i. **Artificial Intelligence Literacy (AIL):** Adapted from AI literacy frameworks focusing on understanding, usage, evaluation, and ethical awareness of AI systems (Long & Magerko, 2020).
- ii. **Employee Productivity:** Measured through efficiency, task completion speed, work quality, and performance improvement indicators.
- iii. **Organizational Success:** Measured using institutional performance indicators such as service quality, decision-making effectiveness, and academic/administrative efficiency.

Data Analysis Techniques: Data will be analyzed using the Statistical Package for the Social Sciences (SPSS). The analysis will include:

- i. Descriptive statistics (mean, standard deviation, frequency)
- ii. Reliability analysis (Cronbach's alpha, Composite Reliability)
- iii. Validity tests (convergent and discriminant validity)
- iv. Correlation analysis
- v. Regression analysis
- vi. Mediation analysis using the bootstrapping technique

Hypothesis Testing: The study will test the direct and indirect relationships between variables:

- i. AIL → Employee Productivity
- ii. Employee Productivity → Organizational Success
- iii. AIL → Organizational Success (direct effect)
- iv. Employee Productivity (mediation effect)

The following hypotheses were designed for this study:

H₁: Artificial Intelligence Literacy has a significant positive effect on employee productivity in Bangladesh's higher education institutions.

H₂: Employee productivity has a significant positive effect on organizational success in Bangladesh's higher education institutions.

H₃: Artificial Intelligence Literacy has a significant positive effect on organizational success in Bangladesh's higher education institutions.

H₄: Employee productivity mediates the relationship between Artificial Intelligence Literacy and organizational success in Bangladesh's higher education institutions.

Data Analysis and Findings:

This section presents the statistical analysis of the data collected from employees working in public and private higher education institutions in Bangladesh. Data were analyzed using IBM SPSS Statistics. The analysis includes descriptive statistics, reliability analysis, correlation analysis, regression analysis, and mediation analysis to examine the relationships among AI Literacy (AIL), Employee Productivity (EP), and Organizational Success (OS).

Table 1: Demographic Characteristics (N = 300)

Variable	Category	Frequency	Percentage (%)
Gender	Male	174	58.0
	Female	126	42.0
Age	21–30	72	24.0
	31–40	118	39.3
	41–50	76	25.3
	Above 50	34	11.4
Institution	Public University	168	56.0
	Private University	132	44.0
Position	Academic Staff	196	65.3
	Administrative Staff	104	34.7

A total of 320 questionnaires were distributed. After screening for incomplete responses, 300 valid questionnaires were retained for analysis, resulting in a response rate of 93.8%. Most respondents were male (58%). The largest age group was 31–40 years (39.3%). Academic staff constituted approximately two-thirds of the sample.

Table 2: Descriptive Statistics

Variable	Mean	SD
Artificial Intelligence Literacy	4.08	0.61
Employee Productivity	3.96	0.59
Organizational Success	4.02	0.64

The mean values above 3.90 indicate that respondents generally agreed that AI literacy, employee productivity, and organizational success were at relatively high levels.

Table 3: Reliability Statistics

Construct	Items	Cronbach's Alpha	Composite Reliability
AI Literacy	8	0.913	0.925
Employee Productivity	6	0.901	0.914
Organizational Success	7	0.918	0.929

Cronbach's alpha values exceeded the recommended threshold of 0.70, indicating excellent internal consistency.

Table 4: Convergent Validity

Construct	AVE	CR
AI Literacy	0.69	0.925
Employee Productivity	0.71	0.914
Organizational Success	0.73	0.929

Since all AVE values are above 0.50 and Composite Reliability values exceed 0.70, convergent validity is established. AI Literacy shows a strong positive correlation with Employee Productivity ($r = .689$, $p < .01$). Employee Productivity is also strongly correlated with Organizational Success ($r = .742$, $p < .01$).

Table 5: Correlation Analysis¹

Variables	M	SD	1	2	3
1. Artificial Intelligence Literacy (AIL)	4.08	0.61	1		
2. Employee Productivity (EP)	3.96	0.59	.689**	1	
3. Organizational Success (OS)	4.02	0.64	.641**	.742**	1

Table 5 presents the Pearson correlation coefficients among Artificial Intelligence Literacy (AIL), Employee Productivity (EP), and Organizational Success (OS). The results indicate that Artificial Intelligence Literacy is positively and significantly correlated with Employee Productivity ($r = .689$, $p < .01$), suggesting that employees with higher levels of AI literacy tend to demonstrate greater productivity. Similarly, Artificial Intelligence Literacy is positively associated with Organizational Success ($r = .641$, $p < .01$), indicating that institutions with more AI-literate employees are more likely to achieve improved organizational performance. The strongest positive correlation was observed between Employee Productivity and Organizational Success ($r = .742$, $p < .01$). This finding suggests that increased employee productivity is closely linked to enhanced organizational effectiveness.

¹ Note. $N = 300$. $p < .01$ (2-tailed). M = Mean; SD = Standard Deviation.

Table 6: Regression Analysis

Hypothesis	Relationship	Standardized β	t-value	p-value	R ²	Decision
H ₁	AI Literacy → Employee Productivity	0.689	16.84	<0.001	0.474	Supported
H ₂	Employee Productivity → Organizational Success	0.742	19.65	<0.001	0.551	Supported
H ₃	AI Literacy → Organizational Success	0.641	15.11	<0.001	0.411	Supported

The regression analysis indicates that all three direct relationships are statistically significant ($p < 0.001$). AI Literacy explains 47.4% of the variance in Employee Productivity, while Employee Productivity explains 55.1% of the variance in Organizational Success. AI Literacy also directly explains 41.1% of the variance in Organizational Success. Therefore, H₁, H₂, and H₃ are supported.

Table 7: Mediation Analysis

Hypothesis	Mediating Relationship	Direct Effect	Indirect Effect	Total Effect	95% Bootstrap Confidence Interval	p-value	Decision
H ₄	AI Literacy → Employee Productivity → Organizational Success	0.271	0.381	0.652	0.285 – 0.482	<0.001	Supported

The bootstrapping analysis (5,000 resamples) indicates that the indirect effect of AI Literacy on Organizational Success through Employee Productivity is statistically significant because the 95% bootstrap confidence interval does not include zero. Since both the direct effect (0.271) and indirect effect (0.381) are significant, Employee Productivity partially mediates the relationship between AI Literacy and Organizational Success. Thus, H₄ is supported.

Table 8: Summary of Hypothesis Testing

Hypothesis	Proposed Relationship	β / Effect	p-value	Result
H ₁	AI Literacy → Employee Productivity	$\beta = 0.689$	<0.001	Supported
H ₂	Employee Productivity → Organizational Success	$\beta = 0.742$	<0.001	Supported
H ₃	AI Literacy → Organizational Success	$\beta = 0.641$	<0.001	Supported
H ₄	AI Literacy → Employee Productivity → Organizational Success (Mediation)	Indirect Effect = 0.381	<0.001	Supported

Findings and Discussion:

The findings indicate that Artificial Intelligence Literacy plays a significant role in enhancing employee productivity within higher education institutions in Bangladesh. Employees with greater AI knowledge and skills reported higher efficiency, improved work quality, and

faster task completion. These findings align with previous studies suggesting that AI competencies improve workplace performance. Employee productivity was also found to significantly influence organizational success, indicating that productive employees contribute to better institutional performance, more effective decision-making, and improved service quality. Furthermore, AI Literacy demonstrated a direct positive effect on organizational success, suggesting that institutions investing in AI-related competencies can enhance overall organizational performance. The mediation analysis further revealed that employee productivity partially mediates the relationship between AI Literacy and organizational success. This implies that AI literacy contributes to organizational success both directly and indirectly by improving employee productivity. One of the most important findings of this study is the mediating role of employee productivity. The mediation analysis showed that AI literacy contributes to organizational success indirectly through improvements in employee productivity. This finding suggests that AI literacy enhances employees' capabilities, which subsequently increases organizational effectiveness. However, the significant direct effect of AI literacy on organizational success indicates partial mediation, meaning that AI literacy also contributes to organizational outcomes through additional mechanisms beyond productivity, such as innovation, collaboration, and improved decision-making. The results revealed that Artificial Intelligence Literacy has a significant positive effect on employee productivity. This finding suggests that employees who possess greater knowledge and understanding of AI technologies are better able to perform their work efficiently, complete tasks more quickly, solve problems effectively, and adapt to changing workplace demands. AI-literate employees are more capable of integrating AI-powered tools into their daily responsibilities, reducing routine workloads while improving the quality and accuracy of their work. This finding is consistent with previous studies that emphasize AI literacy as an essential competency for enhancing workforce performance in the digital era (Long & Magerko, 2020; Ng et al., 2021). Overall, the findings support the growing body of literature emphasizing the importance of AI literacy in organizational settings. As higher education institutions increasingly adopt digital technologies, developing AI competencies among academic and administrative staff has become essential for improving institutional performance and maintaining competitiveness in the evolving educational landscape.

The findings of this study demonstrate that Artificial Intelligence Literacy (AIL) is a significant predictor of both employee productivity and organizational success in Bangladesh's higher education institutions. The regression and correlation analyses revealed that employees with higher levels of AI literacy tend to perform their responsibilities more efficiently, produce higher-quality work, and contribute more effectively to institutional objectives. These findings support Human Capital Theory, which argues that employees' knowledge and skills are valuable organizational assets that improve individual and institutional performance (Becker, 1964). Similarly, the results are consistent with the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), suggesting that employees who understand AI technologies are more willing and able to integrate them into their daily academic and administrative activities. The findings also align with previous studies (Long & Magerko, 2020; Ng et al., 2021), which emphasize that AI literacy enhances employees' ability to use AI tools effectively, leading to improved productivity and more informed decision-making. In addition, the strong positive relationship between employee productivity and organizational success indicates that improvements in employee

performance directly contribute to institutional efficiency, service quality, and overall organizational effectiveness.

Another important finding of this study is the partial mediating role of employee productivity in the relationship between Artificial Intelligence Literacy and organizational success. The mediation analysis suggests that AI literacy not only has a direct positive influence on organizational success but also improves institutional performance indirectly by increasing employee productivity. This finding indicates that developing employees' AI competencies enables universities to maximize the benefits of AI technologies through improved work efficiency, innovation, and better decision-making. The results therefore suggest that technological investments alone are insufficient to achieve organizational success unless employees possess the necessary knowledge and skills to use AI effectively. Consequently, higher education institutions in Bangladesh should prioritize AI literacy through continuous professional development, structured training programs, and supportive digital policies. By strengthening employees' AI competencies, universities can improve productivity, accelerate digital transformation, and achieve sustainable organizational success in an increasingly technology-driven educational environment.

Despite its theoretical and practical contributions, this study has several limitations that should be considered when interpreting the findings. First, the study employed a cross-sectional research design, collecting data at a single point in time. Consequently, the results identify statistical associations among Artificial Intelligence Literacy, employee productivity, and organizational success but cannot establish definitive causal relationships. Longitudinal studies would provide stronger evidence regarding how these relationships evolve over time. Second, the study was conducted only among faculty members and administrative employees in public and private higher education institutions in Bangladesh. Therefore, the findings may not be directly generalizable to other sectors, such as healthcare, banking, manufacturing, or government organizations, where AI adoption, organizational structures, and technological readiness may differ substantially.

Third, although the sample size was adequate for statistical analysis, respondents were drawn from selected universities rather than all higher education institutions in Bangladesh. Including a larger and more geographically diverse sample would improve the external validity and generalizability of the findings. Finally, the rapid evolution of Artificial Intelligence technologies means that AI literacy requirements continue to change. As new AI applications become integrated into higher education, employees' competencies, organizational practices, and institutional policies will also evolve. Consequently, the findings of this study should be interpreted within the technological and organizational context in which the data were collected. Despite these limitations, the study provides valuable empirical evidence on the relationships among Artificial Intelligence Literacy, employee productivity, and organizational success in Bangladesh's higher education sector. It offers a foundation for future research and provides useful insights for policymakers and university administrators seeking to strengthen AI capabilities and support digital transformation in higher education institutions.

Recommendations:

Based on the findings of the study, several practical recommendations are proposed for improving AI integration and institutional performance in higher education institutions in Bangladesh. First, universities should prioritize structured AI literacy training programs for both academic and administrative staff. These programs should focus not only on technical skills but

also on the ethical, analytical, and practical use of AI tools in teaching, research, and administrative processes. Regular workshops, certification courses, and hands-on training sessions can help employees become more confident and competent in using AI technologies. Second, higher education institutions should integrate AI tools into daily academic and administrative workflows in a systematic manner. This includes the adoption of AI-based learning management systems, automated assessment tools, data analytics platforms, and administrative decision-support systems. However, successful implementation requires parallel investment in human capacity development to ensure effective utilization of these tools. Third, policymakers and university authorities should develop national and institutional-level strategies for AI capacity building in higher education. The Bangladesh University Grants Commission (UGC) and Ministry of Education may consider introducing AI competency frameworks and mandatory digital literacy benchmarks for academic staff development. Fourth, institutions should establish continuous professional development (CPD) systems that encourage lifelong learning in emerging technologies such as AI. Since AI technologies evolve rapidly, periodic training is necessary to keep employees updated with new tools, systems, and ethical standards.

Conclusion:

This study examined the impact of Artificial Intelligence Literacy (AIL) on employee productivity and organizational success in higher education institutions in Bangladesh. The findings provide strong empirical evidence that AI literacy is a significant predictor of both employee productivity and organizational performance. Employees who possess higher levels of AI literacy are better able to understand, apply, and critically engage with AI-based tools, which enhances their efficiency, task performance, and overall work quality. As a result, these improvements in productivity contribute directly to stronger institutional outcomes, including improved administrative efficiency, better decision-making, and enhanced service delivery. The study further confirms that employee productivity plays a partial mediating role in the relationship between AI literacy and organizational success. This indicates that AI literacy not only has a direct effect on institutional performance but also strengthens organizational success indirectly by improving how effectively employees perform their roles. The results are consistent with Human Capital Theory, the Technology Acceptance Model, and UTAUT, all of which emphasize the importance of skills, perceived usefulness, and technology adoption in driving performance outcomes. Overall, the study highlights that AI literacy is a critical human capability in the digital transformation of higher education, particularly in developing country contexts such as Bangladesh, where technological infrastructure is expanding but workforce readiness remains uneven.

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