

Technology Acceptance among Students and Teachers in Bangladeshi Universities: Insights from Pabna University of Science and Technology

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ABSTRACT

Adoption of technology by students and teachers is a critical factor in improving the quality and effectiveness of higher education in developing countries. This study, conducted at Pabna University of Science and Technology (PUST), Bangladesh, employs a mixed-methods approach to identify factors influencing technology adoption. Quantitative data were collected from 650 students via a structured web survey, and qualitative insights were gathered from In Depth Interviews with 10 teachers. The findings indicate that students broadly accept technology, citing perceived usefulness and ease of use; they report that technology enhances learning, improves academic performance, and provides valuable study materials. Teachers likewise recognize the pedagogical benefits and express willingness to integrate technology, but inadequate resources, limited training, and resistance from some teachers constrain full adoption. The research also reveals disparities in technological facilities across faculties, with the Faculty of Humanities and Social Sciences most severely affected. The study concludes that stronger institutional support, ongoing training and workshops, and targeted infrastructural development are necessary to advance technology supported teaching and learning, and that these insights can inform policymakers planning for quality education.

Keywords: Technology, Technology Acceptance Model (TAM), Learning, Teaching, Bangladesh.

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1. INTRODUCTION

The National Information and Communication Technology (ICT) Policy was first enacted in Bangladesh in 2002, and subsequently revised in 2008 and 2009. On 5 August 2015, the government made important changes to the document, incorporating multiple important concepts and plans of action (Aziz, 2020; Hossain & Rahman, 2021). The Digital Bangladesh Vision 2021 was formally declared in 2009. To realize the long-term goal of transforming Bangladesh into a developed and prosperous nation by 2041, the government aims to establish a knowledge-based economy, referred to as 'Smart Bangladesh,' in response to the evolving global landscape (Chowdhury, 2022). Technology plays an essential role in universities, improving education, research, and administrative procedures (Shammah, 2023). A smart classroom, equipped with projectors, interactive whiteboards, and audiovisual aids, enhances the quality of teaching and learning. Reading materials can be shared with students via Google Classroom, Moodle, or Blackboard by teachers. Classes can be conducted via Google Meet and Zoom meetings. Universities can employ software applications to facilitate various administrative tasks such as admissions, generating semester results, monitoring attendance, and managing student records. Universities have the ability to incorporate a modern library management system that enables the monitoring of books, self-checkout capabilities, and efficient inventory management (Nakata, 2015). Therefore, it is clear that in order to keep up with the rapid speed of the globe and the Fourth Industrial Revolution, it is essential for universities in Bangladesh to adopt technology in full swing. The traditional educational system has undergone significant alterations due to the COVID-19 pandemic. As a result of the COVID-19 pandemic, educational institutions in Bangladesh saw a prolonged closure, necessitating the adoption of online classes in the education system. Both students and faculties embraced online education, stepping outside their comfort zones. After the pandemic, physical classes started in a full swing and now it is really essential to explore the technology acceptance among the students and teachers of the universities of Bangladesh which they embraced during the pandemic. It is not possible anymore to stay solely in the traditional method of teaching in the universities and so both teachers and students have to adopt technology because after passing the Digital Bangladesh phase, we have come now to Smart Bangladesh phase. The aim of this study is to explore the acceptance of technology among the teachers and students of Pabna University of Science and Technology (PUST), one of the science and

technology universities of Bangladesh. PUST is distinguished by a diverse academic disciplines' environment, ranging from science and engineering to faculties of business, humanities and social science. The diversity can contribute to a comparative analysis of how a similar institution's different academic domains perceive and integrate the use of technology. As the Smart Bangladesh is the national agenda of the country, studying technology acceptance in PUST has relevant implications for policy, infrastructure establishment, and faculty training in other science and technology universities across the country. This study has involved a diverse group of participants, including both male and female students as well as faculty members of Pabna University of Science and Technology (PUST).

1.1 Statement of the problem

Bangladesh has made notable progress in digital infrastructure and technology integration in higher education, yet genuine adoption by teachers and students remains inconsistent, especially in science and technology universities like PUST. Although technology enhances access, learning quality, and resource availability, many still face limited technical skills and insufficient access to modern devices, affecting effective digital tool use (Sadam & Mamun, 2024). Despite its importance for academic success and employability, empirical evidence on the factors shaping technology acceptance in universities is limited. This study investigates the current state of technology use among educators and students at PUST, identifying key drivers and barriers to adoption, and offering insights to improve technology integration in higher education.

1.2 Research objectives

The primary objectives of this research are —

- To identify the factors that influence the level of acceptance of technology among university students and faculty members.
- To assess the proficiency of the university's students and faculty in utilizing technology.
- To assess students' and teachers' perceptions of technology's impact on performance.

1.3 Research questions

The study seeks to answer the following research questions:

- What are the factors that influence the acceptance and behavior of

university students towards technology?

- How do faculty members perceive and use technology?

1.4 Rationale of the study

Bangladesh now has 53 public universities, of which 13 are focusing on science and technology for education of the high-end human resource. However, they also offer courses in arts and social sciences and business studies (Ahmed, 2022). Pabna University of Science and Technology (PUST), founded in 2008, now has 5 faculties, 21 departments, about 172 faculty members and almost 5,000 students. Its vision is to promote innovation and research to support the national and international development of the 21st century. As a leading science and technology university, PUST strives to nurture professionals with high practical skills as well as humanistic values. Due to its technological orientation, it is important to measure the degree of technology acceptance among students and teachers.

2. LITERATURE REVIEW

In their study, Luan and Teo (2009) examined Malaysian university students and teachers to assess their embrace of technology. The researchers employed the Technology Acceptance Model (TAM) as the theoretical framework for their investigation. They discovered that perceived usefulness, perceived ease of use, and attitude towards computer use are influential factors in determining the intention to adopt technology.

Salloum et al. (2019) extensively studied the Technology Acceptance Model (TAM) and its potential in assessing e-learning acceptance. They demonstrated in their study that a literature review of 120 studies found that computer self-efficacy, subjective/social norm, perceived enjoyment, system quality, information quality, content quality, accessibility, and computer playfulness were the most common external factors. The Technology Acceptance Model (TAM) was expanded to analyze the acceptance of e-learning among students in five universities in the UAE. The study revealed that various factors have a significant impact on the perceived ease of use of e-learning systems. Specifically, system quality, computer self-efficacy, and computer playfulness were found to be influential. Additionally, the study found that information quality, perceived enjoyment, and accessibility positively contribute to both the ease of use and usefulness of the system. In a study conducted by Jung et al. (2008) at a Swedish University, business students

were surveyed to assess their acceptance of e-learning. The researchers utilized the technology acceptance model (TAM). The study revealed that the perceived usefulness of e-learning significantly influences a student's acceptance of it.

The study conducted by Ratna and Mehra (2015) examined students' attitudes and actions towards e-learning, utilizing the Technology Acceptance Model (TAM) within a course framework. The study, conducted using Davis's scale, presented accurate findings on the various factors that impact the acceptance of e-learning in India. The findings indicate strong correlations between perceived ease of use, usefulness, attitude, behavioral intention to use, and actual use. The relationships between perceived usefulness, attitude, ease of use, and behavioral intention to use e-learning are significantly influenced by various factors.

In a study conducted by Chowdury et al. (2018), the focus was on investigating the integration of ICT in higher education teaching and learning in Bangladesh, specifically among the students and teachers of the University of Dhaka. Their research revealed that the integration of ICT in higher education teaching-learning is not being effectively implemented. This study has identified several factors that hinder the successful integration of ICT in education. These include teachers' limited knowledge and skills, insufficient time for class preparations, inadequate equipment and internet access, and a lack of technical support.

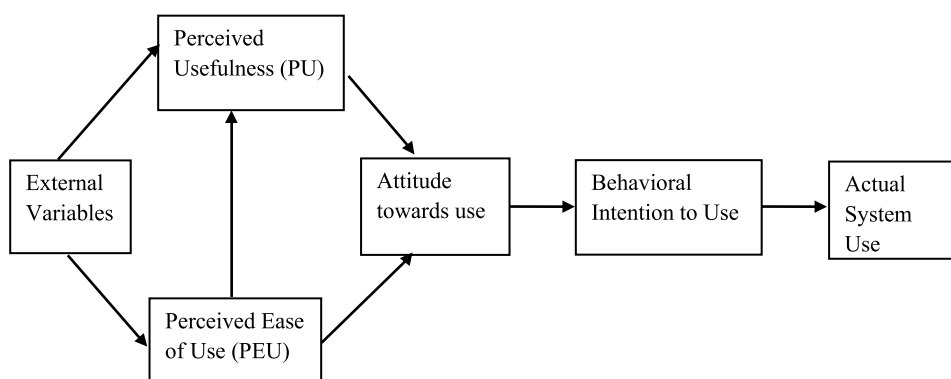
In a recent study, Tamal et al. (2022) examined the attitudes towards e-learning among 694 university students from Daffodil International University in Bangladesh amidst the COVID-19 crisis. The researchers aimed to gain insights into the level of acceptance of e-learning during this challenging period. The findings of this study indicate that the level of acceptability towards e-learning among students was insufficient. Many students expressed dissatisfaction with their e-learning experience due to a lack of technological skills, limited familiarity with the platform, complexity, low productivity, and inefficiency. A study was conducted by Islam (2024) at the undergraduate level to investigate the challenges associated with the use of technology at Kurigram Government College, situated in the northern border region of Bangladesh. He investigated the factors contributing to the lack of technology use in undergraduate classes, identifying inadequate training in PowerPoint slide preparation, senior teachers' reluctance to embrace technology in favor of traditional teaching methods, issues such as load-shedding, slow internet speeds, and insufficient internet facilities as significant barriers.

In their study, Ali et al. (2019) illustrated the manifold advantages of incorporating technology into the classroom. They disclosed that it enhances students' engagement, retention of knowledge, fosters individual learning, and promotes teamwork. In addition, technology enables pupils to acquire practical life skills. The study also revealed that incorporating technology in the classroom is advantageous to educators as well. Utilizing virtual lesson plans, grading tools, and online exams can significantly enhance time efficiency for teachers. Technology can facilitate more engagement in the learning process, a goal that is often challenging to accomplish with traditional methods of teaching.

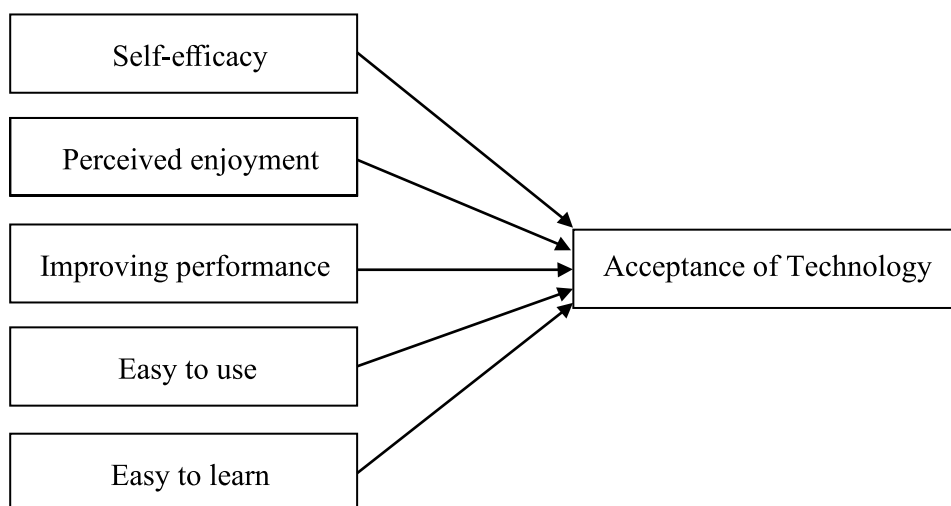
While most studies within the context of Bangladesh and other developing countries have focused on the technology adoption issue from a student or teacher perspective, none have given attention to both within the same institutional environment. This one-sided perception omits consideration of how students (users of technology) and teachers (technology facilitators) perceive the issue. So, this research attempts to explore and compare students' and faculty's technology acceptance in a holistic manner on digital adoption in higher education. Most of researches on technology acceptance in Bangladesh has been undertaken inside urban or private universities where facilities have better availability. In addition, public regional universities like Pabna University of Science and Technology (PUST) have not yet drawn research attention despite notable infrastructural and administrative problems. Thus, this research focuses PUST in order to bridge this contextual gap and represent the reality of technology adoption in regional universities.

3. THEORETICAL FRAMEWORK

This study used the Technology Acceptance Model (TAM) to explore the technology acceptance among the students and teachers of Pabna University of Science and Technology (PUST). Technology acceptance refers to an individual's psychological condition regarding their deliberate or intentional usage of a specific technology. The Technology Acceptance Model (TAM), created by Fred Davis in 1986, posits that human attitudes towards technology are shaped by two key factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the extent to which we believe that a technology can enhance our performance or assist us in achieving our objectives. Perceived ease of use refers to the degree to which we expect that using a technology would be smooth and straightforward (Davis, 1989).



This study used self-efficacy, perceived enjoyment, improving performance, easy to use and easy to learn as independent variables on which the technology acceptance of the students and teachers of PUST depend. The following is the proposed model for this study.



4. RESEARCH METHODOLOGY

4.1 Research Design and Approach

The study used a cross-sectional research design to collect data from a large population at a single point in time, making it both cost-effective and suitable for assessing the current level of technology acceptance. A mixed-method was applied, combining quantitative surveys with students and qualitative interviews with teachers. The quantitative data offered measurable patterns of technology use, while the qualitative insights revealed teachers' attitudes and institutional

challenges that numbers alone could not capture. Together, these methods ensured triangulation, improved validity, and provided a more comprehensive understanding of technology acceptance at PUST.

4.2 Sample Design and Size

For the quantitative part, stratified random sampling was used to ensure proportional representation across the five faculties (Business Studies, Engineering and Technology, Humanities and Social Science, Life and Earth Sciences, and Sciences). Each faculty served as a stratum, and students were randomly selected within each group. The final sample included 650 students—130 from each faculty—allowing balanced representation and meaningful cross-faculty comparisons.

For the qualitative part, 10 faculty members (6 Lecturers and 4 Assistant Professors) from various departments were selected through convenience sampling. Since qualitative research prioritizes depth over breadth, this sample size was sufficient to reach thematic saturation, where additional interviews were unlikely to generate new insights.

4.3 Data Collection Method

4.3.1 Web survey

To collect quantitative data, a web survey was conducted in which a questionnaire has been sent via the internet to the students of PUST and they responded to this survey over the World Wide Web.

4.3.2 In-Depth Interview

To collect qualitative data, In-Depth Interviews were taken from the teachers of PUST.

4.4 Data Collection Instrument

4.4.1 Questionnaire

A closed-ended web questionnaire was used to collect quantitative data from PUST students. Based on the Technology Acceptance Model (TAM), it included constructs such as Perceived Usefulness, Perceived Ease of Use, Self-Efficacy, and Perceived Enjoyment. A simple 3-point Likert scale (Agree, Neither, Disagree) was chosen to accommodate varying levels of digital literacy, minimize response fatigue, and capture broad agreement patterns in a large online survey. A pilot study was conducted beforehand to ensure the questionnaire's clarity, reliability, and validity.

4.4.2 Interview Protocol

In this study, an interview protocol was formulated and utilized to conduct the In-Depth Interviews with teachers at PUST. The interview protocol encompassed open-ended questions that were specifically constructed around the fundamental constructs of TAM, i.e., perceived usefulness, perceived ease of use, self-efficacy and behavioral intention to use technology. This structure provided opportunities for teachers to share their personal and professional experiences while keeping focus on the theoretical foundation of the study. The open-ended design allowed participants to share specific examples related to institutional barriers, structural limitations, and resistance to change, as well as make recommendations for improvement, which would have been difficult to capture through closed-ended questions in the interview protocol.

Table 1: Overview of data collection method, Instrument, sample size & sampling technique

Data Collection Method	Sample Size	Sampling Technique	Data Collection Instrument
Web survey	650 Students	Stratified random sampling	Close-ended questionnaire
In-Depth Interview	10 Teachers (six Lecturers and four Assistant Professors)	Convenience sampling	Interview protocol

4.5 Data Analysis

Data from the student survey was analyzed using IBM SPSS Statistics 20. Frequency distributions, percentages and graphical presentations were used to summarize the student responses for clarity and to identify major trends. Descriptive statistics were deemed to be adequate as the focus of the research was to describe and explore the level of acceptance of technology use, rather than causal relationships. Interview data from teachers were analyzed through thematic analysis that revealed emerging themes such as “infrastructural constraints”, “teachers’ resistance” and “training requirement”. Thematic analysis is appropriate as it allows the flexibility to interpret themes based on qualitative data and contributes further understanding of the quantitative results.

5. RESULT

5.1 Demographic Profile

The demographic analysis (Table 2) illustrates that a total of 650 students from Pabna University of Science and Technology (PUST) participated in the study, comprising 54% male and 46% female respondents. Representation across all five faculties—Business Studies, Engineering and Technology, Humanities and Social Science, Life and Earth Science, and Science—was evenly distributed at 20% each, ensuring cross-disciplinary balance. The majority of participants were undergraduate students, with 41.8% enrolled in the first year, followed by 27.7% in the second year, 19.5% in the fourth year, and 10.9% in the third year. Most respondents were aged between 21 and 23 years (58.6%), followed by 18–20 years (28.0%) and 24–26 years (13.4%). The demographic structure reflects a youthful and diverse academic population, offering a representative foundation for assessing technology acceptance trends within the institution.

Table 2: Demographic Profile of Respondents (N=650)

Category	Frequency	Percentage (%)
Gender		
Male	351	54.0
Female	299	46.0
Faculty		
Business Studies	130	20.0
Engineering and Technology	130	20.0
Humanities and Social Science	130	20.0
Life and Earth Science	130	20.0
Science	130	20.0
Academic Year		
Honors 1 st Year	272	41.8
Honors 2 nd Year	180	27.7
Honors 3 rd Year	71	10.9
Honors 4 th Year	127	19.5
Masters	—	—
Age (years)		
18–20	182	28.0
21–23	381	58.6
24–26	87	13.4

Source: Field work, November 2024

5.2 Devices for Learning

As shown in Figure 1, the majority of students at Pabna University of Science and Technology (PUST) rely primarily on smartphones for their academic activities (87.7%), followed by laptops (47.9%) and desktop computers (11.9%). This distribution reflects the widespread accessibility and affordability of mobile devices compared to other digital tools in Bangladesh's higher education context.

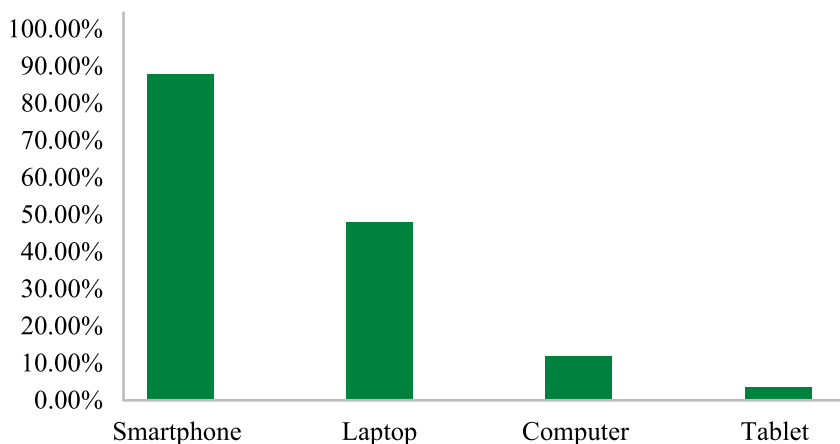


Figure 1: Devices used by the students for learning (Source: Field Work, November, 2024)

5.3. Usefulness of Technology

Table 3 highlights students' perceptions of the usefulness of technology in their learning processes. Across all faculties, the overwhelming majority of students demonstrated strong agreement that technology enhances their academic experience, performance, and engagement. Students from the Faculty of Life and Earth Science exhibited the highest levels of agreement, with 96.1% acknowledging that technology enhances learning and 95.4% confirming that it contributes to improved academic performance. Similarly, 96.2% of respondents from the Faculty of Engineering and Technology agreed that technology provides valuable academic resources.

These findings suggest that technology serves as an integral enabler of independent and resource-driven learning, consistent with earlier studies that emphasize the role of digital tools in promoting active learning and self-directed study (Raja & Nagasubramani, 2018). Additionally, a large proportion of students agreed that visual aids—particularly PowerPoint slides and multimedia presentations—increase their attention and participation in class. The results collectively

underscore that the perceived usefulness of technology is high among students, reflecting their recognition of technology as a key driver of learning efficiency, information accessibility, and academic success.

Table 3: Perceived usefulness of technology in enhancing students’ learning and academic performance (%)

Faculty	Using Technology Enhances Learning Experiences of Students	Technology for Better Academic Performance	Technology for Valuable Resources for Studies	Classes using slides increases attention
Faculty of Business Studies				
Agree	93.1	90.0	94.6	85.3
Neither agree nor disagree	6.1	6.2	3.8	10.8
Disagree	0.8	3.8	1.6	3.9
Total	100.0	100.0	100.0	100.0
Faculty of Engineering and Technology				
Agree	93.9	93.8	96.2	78.5
Neither agree nor disagree	3.8	4.6	3.1	14.6
Disagree	2.3	1.6	.8	6.9
Total	100.0	100.0	100.0	100.0
Faculty of Humanities and Social Science				
Agree	90.8	93.8	96.1	86.1
Neither agree nor disagree	6.9	5.4	2.3	13.1
Disagree	2.3	.8	1.6	0.8
Total	100.0	100.0	100.0	100.0
Faculty of Life and Earth Science				
Agree	96.1	95.4	93.8	87.6
Neither agree nor disagree	1.6	3.8	4.6	9.2
Disagree	2.3	.8	1.6	3.2
Total	100.0	100.0	100.0	100.0
Faculty of Science				
Agree	90.0	90.0	91.5	66.1
Neither agree nor disagree	7.7	7.7	5.4	18.5
Disagree	2.3	2.3	3.1	15.4
Total	100.0	100.0	100.0	100.0

Source: Field Work, November, 2024

5.4 Ease of Use and Attitude Toward Technology Adoption

The Global System for Mobile Communications Consumer Survey 2023 indicates that in Bangladesh, there exists a 20 per cent gender gap in mobile ownership and a 40 per cent gender gap in mobile internet adoption (Islam, 2024). A study found that male students usually demonstrate a greater level of confidence and self-efficacy in their use of digital technology when compared to female students (Hossain et al., 2023). The restricted access to digital technology stands as a significant barrier that hinders women’s opportunities to cultivate their confidence and self-efficacy in utilizing technology. Traditional gender roles are indeed observed to influence the engagement with technology. Male members are granted access to digital devices, and many families prioritize this aspect. However, these families often do not extend the same priority to women’s access to digital devices, as there is a perception that women might misuse the devices or could face societal judgment (Jahan, 2023; Jahan & Zahan, 2021). Furthermore, our society is influenced by deeply rooted stereotypes that depict technology as a male-dominated domain. This perception undoubtedly undermines women’s confidence and dissuades them from acquiring digital skills.

As shown in Table 4, both male and female students at PUST demonstrated similarly high confidence and positive attitudes toward technology use. Over 85% of respondents in both groups agreed that learning new technologies is easy and that digital tools enhance their academic work. Female students reported slightly stronger beliefs in technology’s role in future career success (96.7%) compared to males (93.1%), suggesting the gender gap in digital adaptability is narrowing. Overall, these findings indicate strong technological self-efficacy and a favorable behavioral intention toward technology adoption among students.

Table 4: Ease of use of technology and students’ attitudes toward technology utilization (in %)

Gender	Agree	Neither Agree nor Disagree	Disagree
Finding it easy to learn new technology for study			
Female	88.7%	9.0%	2.3%
Male	89.4%	8.5%	2.1%
Using technology in coursework is straightforward and uncomplicated			
Female	77.3%	15.4%	7.3%
Male	71.5%	18.5%	10.0%

Confident in his/her ability to use various technological tools for learning			
Female	86.7%	10.0%	3.3%
Male	88.0%	8.5%	3.5%
Enjoying to use technology for academic work			
Female	92.3%	6.0%	1.7%
Male	91.4%	6.6%	2.0%
Feeling positive about integrating technology into learning process			
Female	90.3%	8.7%	1.0%
Male	90.2%	8.3%	1.5%
Having the belief that technology will be essential for future career success			
Female	96.7%	2.7%	0.6%
Male	93.1%	5.4%	1.5%

Source: Field Work, November, 2024

5.5 Behavioral Intention to Use Technology

As shown in Table 5, most PUST students demonstrate strong behavioral intentions to adopt technology in their learning. About 90.2% intend to increase technology use, 89.1% plan to recommend it to peers, and 86.5% actively seek new digital tools. These patterns align with the Technology Acceptance Model (TAM), which emphasizes perceived usefulness and ease of use as key drivers of intention. Consistent with Tables 2 and 3, students’ positive perceptions of technology directly support their willingness to adopt and promote technology-enhanced learning.

Table 5: Behavioral Intention to use technology

Statement	Agree	Neither Agree nor Disagree	Disagree
Intending to use more technology in studies moving forward	90.2%	8.2%	1.6%
Planning to recommend the use of technology to their peers for educational purposes	89.1%	9.5%	1.4%
Seeking out actively new technological tools that can aid their academic success	86.5%	11.2%	2.3%

Source: Field Work, November, 2024

5.6 Availability and Accessibility of Central Laboratory Facilities

As shown in Figures 2 and 3, students at Pabna University of Science and Technology (PUST) reported significant challenges related to central laboratory infrastructure. A considerable proportion of respondents disagreed that the

central lab has a sufficient number of computers or adequate seating capacity. These findings indicate a resource–capacity gap within the university’s ICT infrastructure, which may hinder equitable access to digital tools—particularly for students who rely on institutional computing resources.

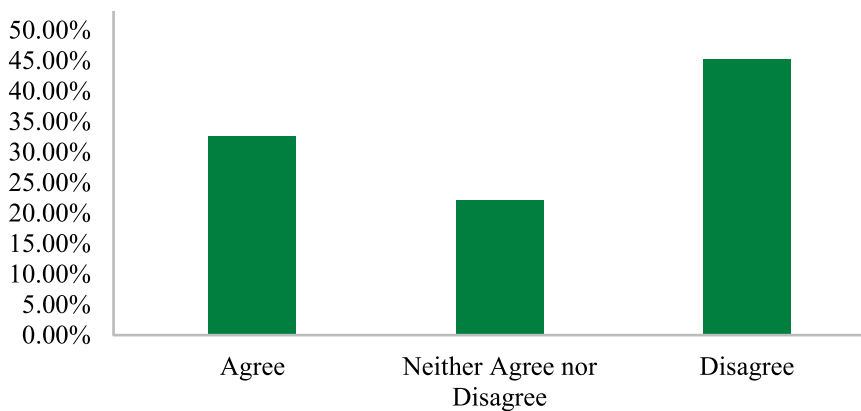


Figure 2: Availability of sufficient computers in the university central lab (Source: Field Work November, 2024)

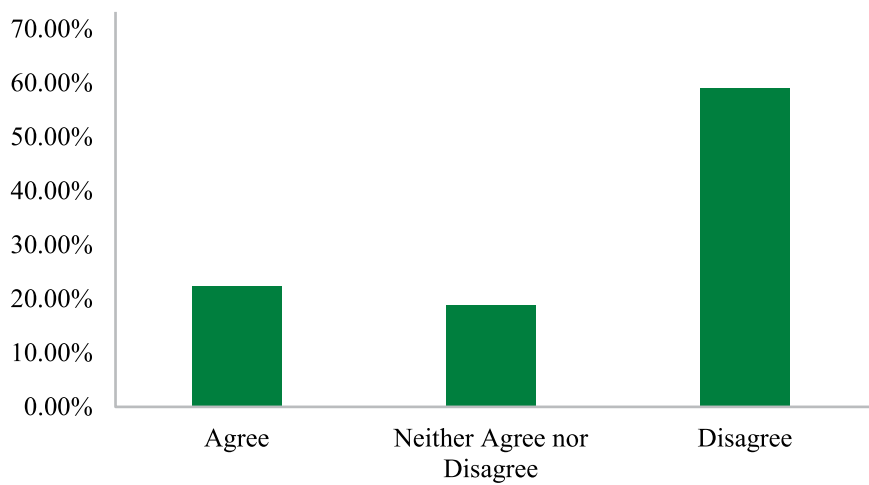


Figure 3: Adequacy of seating arrangements in the university central lab (Source: Field Work, November, 2024)

5.7 Technological Infrastructure and Learning Support

As illustrated in Figure 4, only 22.4% of students at Pabna University of Science and Technology (PUST) agreed that the university’s existing technological infrastructure effectively supports their learning experience. The majority of respondents expressed neutral or negative views, indicating perceived inadequacy

in institutional ICT facilities. This finding underscores a critical infrastructural gap that may hinder the integration of digital tools in teaching and learning. The result aligns with national challenges in higher education, where limited investment in ICT infrastructure constrains digital transformation efforts.

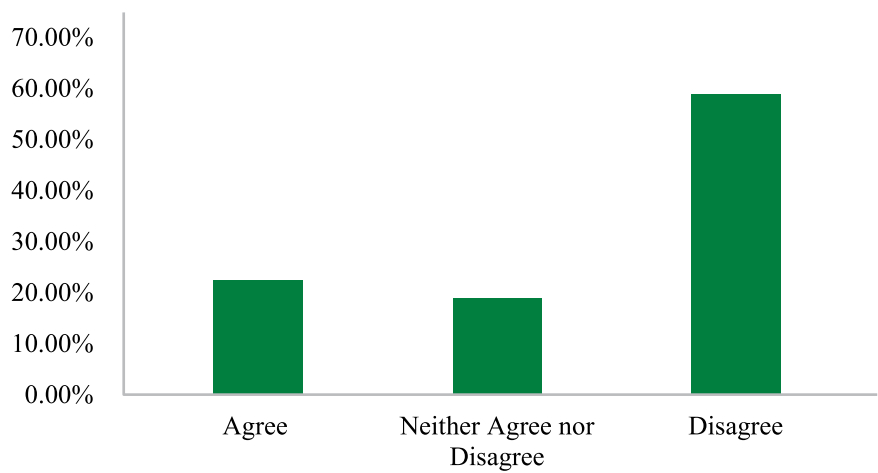


Figure 4: University’s technological infrastructure supports effective learning experiences (Source: Field Work, November, 2024)

5.8 Departmental Technological Infrastructure

As shown in Table 6, students’ perceptions of departmental infrastructure differ notably across faculties. Engineering and Technology (65.1%) and Business Studies (49.9%) report the highest availability of classroom technologies—computers, projectors, and microphones—along with greater use of slides and computers in teaching. In contrast, Humanities and Social Science and Science students show lower satisfaction, with many indicating insufficient equipment and limited faculty promotion of technological tools. Across all faculties except Science, most students agree that traditional book-based teaching fails to sustain attention, underscoring the need for more interactive, technology-enhanced instruction. Overall, the results highlight clear disparities in technological readiness and pedagogical integration across faculties.

Table 6: Students' perceptions of departmental infrastructure and technology integration (in %)

Faculty	Computer, projector & microphone available	Faculty members use slides	Books/sheets fail to hold attention	Teachers encourage tech use
Faculty of Business Studies				
Agree	49.9	44.0	49.0	49.7
Neither agree nor disagree	23.9	20.8	16.2	15.7
Disagree	26.2	33.5	34.8	34.6
Total	100.0	100.0	100.0	100.0
Faculty of Engineering and Technology				
Agree	65.1	66.5	42.2	50.6
Neither agree nor disagree	15.1	10.4	16.8	9.4
Disagree	19.8	23.1	41.0	40.0
Total	100.0	100.0	100.0	100.0
Faculty of Humanities and Social Science				
Agree	15.4	23.5	53.7	13.4
Neither agree nor disagree	20.4	24.8	22.9	27.6
Disagree	64.2	78.1	23.4	59.0
Total	100.0	100.0	100.0	100.0
Faculty of Life and Earth Science				
Agree	29.2	31.3	55	28.8
Neither agree nor disagree	26.9	23.2	22.6	25.2
Disagree	43.9	45.5	22.4	46.0
Total	100.0	100.0	100.0	100.0
Faculty of Science				
Agree	26.2	27.9	28.4	28.6
Neither agree nor disagree	14.0	20.8	21.8	25.2
Disagree	59.8	51.3	49.8	46.2
Total	100.0	100.0	100.0	100.0

Source: Field Work, November, 2024

5.9 Acceptance and use of technology

Ease of technology and its benefits

In an inquiry regarding the comfort of using technology, out of a total of 10 teachers interviewed, 7 stated that they feel comfortable using technology, while 3 expressed that they do not feel as comfortable with it. The perception of

university teachers in Bangladesh regarding the effectiveness of using technology is varied and multifaceted. While certain teachers exhibit a level of comfort in utilizing technology, others perceive it as ineffective. The underlying cause may stem from insufficient familiarity or a lack of confidence in utilizing digital tools (Shelly & Kamal, 2022). An assistant professor from Electrical, Electronic, and Communication Engineering noted, “I am comfortable using technology. In engineering, engaging with modern technologies is essential.” A chemistry lecturer stated, “I am very comfortable using technology; it allows me to incorporate 3D models and animations, helping students visualize complex concepts and saving time in class.” A Public Administration lecturer commented, “I am comfortable using technology, but lack of modern equipment in my department limits its use. Generations like Gen Z and Gen Alpha can grasp concepts more easily when technology is used.” These responses suggest that while faculty generally value technology for enhancing teaching, practical constraints and varying confidence levels affect its adoption.

Online classes

The question arises regarding the comfort level of conducting classes online. An assistant professor from the Faculty of Engineering and Technology has expressed that he finds online classes to be quite comfortable, noting that they facilitate the creation of flexible schedules. However, certain faculty members experience discomfort with online classes. They believe that loadshedding can happen at any moment, resulting in the loss of internet connectivity. Moreover, students often fail to respond adequately, which hinders the setting up of an engaging classroom environment in online classes. They expressed a preference for taking classes in person, as this allows for the creation of an engaging classroom environment. Additionally, they indicated a desire to incorporate technology within the physical classroom setting.

Result preparation

In a discussion regarding the process of result preparation through online methods, a lecturer expressed, “In my view, the online approach to result preparation remains quite challenging. Occasionally, technical issues may emerge, leading to delays in the preparation of results. Furthermore, there are instances when it becomes tiresome to input numbers twice”. An assistant professor from the Faculty of Engineering and Technology stated a distinctly different viewpoint. He mentioned that he was quite exhausted from preparing results manually, so he now finds relaxation in preparing results due to the online-based system.

Using PowerPoint presentations in the class

In discussing the significance of PowerPoint presentations in the educational context, a lecturer from the Chemistry Department remarked, “Conventional teaching from textbooks often hinders students’ understanding of complex concepts. Using slides allows incorporation of images, diagrams, and charts, making learning more engaging and helping students maintain focus”. Another lecturer from the Faculty of Humanities and Social Sciences shares this same perspective. She believes that when faculty members teach directly from textbooks and sheets, students are unable to engage with the material, resulting in a lack of interest in the lessons. Utilizing slides in the classroom allows educators to present students with captivating images and videos, thereby enhancing the lesson’s engagement and interest level. However, she also indicated that, regrettably, not all departments at PUST are equipped with modern technologies in their classrooms. Despite the desire to utilize PowerPoint presentations during class, they are unable to do so because of insufficient infrastructure. These insights highlight the pedagogical value of PowerPoint presentations, tempered by infrastructural limitations.

Technology integration in teaching practices

A faculty member from the Faculty of Engineering and Technology commented, “Integrating technology into teaching is highly beneficial for students. Using visual aids and sound systems helps sustain students’ focus, improves comprehension, reduces physical exertion for educators, and familiarizes students with contemporary research and developments in the discipline.” Similarly, a faculty member from the Faculty of Humanities and Social Sciences stated, “The integration of technology in teaching provides clear advantages for both students and teachers. It enhances student performance, fosters creativity, helps maintain students’ attention, and allows educators to deliver more engaging and effective classes.” These perspectives underscore that technology not only supports learning but also improves teaching efficiency and classroom dynamics.

Resistance from teachers

A faculty member from the Faculty of Science at PUST remarked on the technology acceptance and use among teachers, noting that it is undeniable that some educators are resistant to adopting and utilizing technology to a greater extent. The traditional method of teaching is preferred by them, as they are hesitant to incorporate technology into the teaching process. It is evident that they predominantly highlight the disadvantages associated with the use of technology. Recently joined teachers exhibit a high level of technological proficiency,

motivating students to increasingly embrace and utilize technology in response to the requirements of the digital workplace.

Training

The teachers emphasized the importance of offering training or support to university teachers for the effective integration of technology in their teaching practices. Many teachers have an inadequate knowledge in understanding various types of technologies and their applications in the teaching process. Additionally, some teachers exhibit reluctance towards the integration and utilization of technology in their teaching practices. They may feel a decrease in confidence or motivation when it comes to utilizing digital tools, perceiving them to be disruptive or redundant. It is essential that, through training and workshops, teachers are made to understand the importance of integrating technology into their teaching practices. The teachers further stated that they had not been provided with any training or support from PUST regarding the use of technology into their teaching practices.

Negative experiences while using technology

In discussing the negative experiences teachers have encountered with technology in their teaching practices, a faculty member from Urban and Regional Planning noted, "One significant challenge that could impede the learning process is the availability of specialized software related to the subject matter. Certain software can be prohibitively expensive when seeking to acquire the licensed version. Consequently, students are compelled to utilize the unlicensed version, which frequently limits the available options for those technologies. Another issue has been identified regarding the availability of instruments for laboratory work. The administration follows an extensive procedure for the procurement and disbursement of electronics or hardware necessary for our students' lab work." A faculty member from the Faculty of Science expressed his negative experiences, stating, "I have faced poor internet connection and frequent load-shedding, which disrupts the continuous use of technology in the class."

Another faculty member from the Faculty of Humanities and Social Sciences stated that, "We have not had access to the plagiarism software iThenticate for approximately three months. Furthermore, during the process of preparing results or engaging in tasks on the PC, we experience load-shedding, which results in significant distress for us."

6. CONNECTION OF FINDINGS WITH TAM

The results of this study can be well explained using the Technology Acceptance

Model (TAM), wherein users' acceptance of technology depends mainly on two constructs—Perceived Usefulness (PU) and Perceived Ease of Use (PEU)—that impact their Behavioral Intention to Use (BIU) or actual usage decisions.

The results of the survey indicated high consonance between respondents' views and the TAM. Most students believed that technology makes them learn better, offers a useful study material, and stimulates class participation with the highest Perceived Usefulness (PU). Teachers also stressed that technology allows them to present difficult subjects more clearly and assessment tasks more easily. These results validate that when individuals perceive concrete academic or professional advantages, their acceptance grows as TAM states.

Students and teachers were confident in using digital tools, this also indicated that Perceived Ease of Use (PEU) positively influences their attitudes toward technology. Ease of learning new applications and tools favored their frequent use and was especially prominent among younger faculty members and technology-savvy students. Nevertheless, limited lab facilities, poor and unreliable internet connectivity and lack of training have decreased PU for some of respondents; this indicates the role played by external variables on both PU and PEU.

It was also discovered that while both students and many teachers had high intention to use the technology, lack of institutional support and infrastructure preparedness inhibited actual usage of the system. This is consistent with TAM's claim that behavioral intention does not necessarily lead to usage in the absence of favorable external conditions.

7. DISCUSSION

Bangladesh aims to achieve the status of a developed nation by the year 2041. To facilitate this transformation in Bangladesh, it is essential to develop a skilled workforce in the fields of science, technology, engineering, and mathematics (STEM). The science and technology universities of Bangladesh focus on cultivating highly skilled professionals in STEM fields, equipping them to foster innovation and tackle the national challenges faced by Bangladesh. The vision of Pabna University of Science and Technology is to foster the generation of new ideas and to engage in innovative research within the fields of science and technology. This initiative is directed by graduates who are highly skilled, trained, efficient, and experienced, with the aim of serving both the nation and the global community in the 21st century.

Findings from this study show that the attitude of students and teachers at PUST towards technology in general is positive, thus verifying that the core constructs

of TAM—Perceived Usefulness (PU) and Perceived Ease of Use (PEU)—are key factors influencing users' decision to adopt digital tools. The findings help contribute to the increasing literature on technology acceptance in higher education among developing countries particularly considering ongoing shift of Bangladesh from Digital Bangladesh to Smart Bangladesh.

The findings are in line with earlier studies carried out in Bangladesh and other developing nations. Similar to Chowdhury et al. (2018) that reported inadequate infrastructure and poor teacher training as two most prominent barriers to integration of ICT in higher education, this study revealed poor lab facilities, unstable internet and lack of institutional support as major obstacles. Islam (2024) and Tamal et al. (2022) similarly observed that although learners were willing to use technology, limited ability and problems with connectivity impeded the effectiveness of e-learning. These findings have been reinforced in the present study, which demonstrates that even in a Science and Technology university where technological literacy may be assumed to be high, infrastructural and policy-level deficiencies persist.

Unlike some international studies, namely Luan and Teo (2009) in Malaysia and Ratna and Mehra (2015) in India, which indicated that perceived usefulness and ease of use were significant predictors of behavioral intention across all faculties, PUST recorded differences between faculties. Significant differences were observed in technology acceptance between students of the Faculty of Business Studies and the Faculty of Engineering and Technology compared with those from the Faculty of Humanities and Social Science. This disparity may indicate that institutional prioritization and resource allocation can affect acceptance rates, which is also supported by Salloum et al. (2019) in the UAE context.

The results also have broader implications for higher education in Bangladesh. The enduring infrastructure and training gaps even in a specialized science and technology university point to the need for more focused interventions around universities if the national drive towards Smart Bangladesh is to be achieved. Policymakers and University Grant Commission (UGC) should prioritize investment for ICT infrastructure, enhancing teacher digital literacy and student access programs. Academia and ICT industry collaboration can also be a means of innovation and to bridge the distance between technology potentiality and its use in classroom.

8. RECOMMENDATION

The results of this study indicated that a considerable proportion of both students and teachers recognized the usefulness of technology and its user-friendliness. However, the manner in which the infrastructural development of universities and departments ought to progress is not currently being realized. Several issues require attention and resolution.

- Some teachers integrate technology effectively, while others resist due to lack of confidence and skill, indicating a need for training programs and workshops.
- Modern students are highly tech-savvy, and visual aids (images, videos, diagrams) significantly enhance comprehension and retention. However, simply relying on downloaded slides limits pedagogical effectiveness. Educators need to design interactive, contextually relevant lessons that actively engage students and connect digital content to real-world applications.
- Only the Faculties of Business Studies and Engineering and Technology have well-established technology-based teaching frameworks; other faculties require upgraded classrooms with projectors, computers, internet access, and whiteboards.
- Central labs should have sufficient computers, seating, and robust internet connectivity.
- Teachers should guide students in using emerging technologies to strengthen learning.
- Humanities and Social Sciences Faculty must receive equal priority alongside science and technology faculties.
- Educators require access to plagiarism software and other essential teaching tools.
- Load-shedding and interruptions must be addressed to ensure uninterrupted technology use in classes.
- Result-preparation systems should be improved to avoid delays in semester final results.
- Universities should develop ICT policies aligned with Smart Bangladesh Vision 2041, covering online teaching, assessments, e-learning platforms, and data protection.

- A permanent ICT monitoring team could regularly evaluate technology deployment, user satisfaction, and propose improvements.

5. CONCLUSIONS

The significance of embracing and utilizing technology within the university environment is paramount for enhancing learning experiences, fostering classroom engagement, and equipping both students and educators to face the challenges of the future. The aim of this study was to investigate the level of technology acceptance by students and instructors at Pabna University of Science and Technology (PUST), applying the Technology Acceptance Model (TAM) as a theoretical model. The findings show a positive attitude of students as well as teachers toward the use in academics. The most important point identified is that PU has the primary effect on technology acceptance-students perceive that technology enhances learning quality, material facilities, and academic productivity. PEU also has a positive effect on acceptance since most of the respondents consider digital tools to be easy to learn and use. Nevertheless, the study also demonstrates significant barriers to the necessary translation of positive attitudes into practice. These are poor ICT infrastructure, unreliable internet access, deficient computer lab facilities and a lack of systematic training for teachers. The variation in use across faculties also indicates that institutions have a powerful role to play in the process through resource allocation and support structures. Overall, while the level of digital awareness and acceptance among PUST is high, there are structural and faculty-based barriers that prevent effective integration of technologies in the teaching-learning process. Further comprehensive research with methodical rigor and wider participation can resolve the limitations of the study. This research can draw attention to the educationists, policymakers and researchers.

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