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A Pre-Test for a Technology Acceptance Implementation to Enhance Student Learning on Campus

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Abstract

Technology plays a pivotal role in transforming national educational initiatives. Within this context, technology empowerment is identified to highlight the use of ICT to enhance the quality of learning in Malaysia. Although technology integration in education is increasing, some students have yet to experience its advantages fully. To investigate this issue, a study was conducted at Universiti Tun Hussein Onn Malaysia with three primary objectives: to assess students' acceptance of technology, to identify the factors influencing this acceptance, and to analyze the relationship between technology acceptance and academic performance. The research employed a quantitative approach, distributing questionnaires to students across various faculties. The data collected were analyzed using descriptive and inferential statistics. The findings indicated a moderate to high level of technology acceptance among students, with technology skills, infrastructure support, and student attitudes identified as the major contributing factors. Additionally, a positive impact was observed between technology acceptance and academic performance, particularly regarding access to learning resources. In conclusion, fostering technology acceptance can significantly improve learning effectiveness, provided that suitable technological resources and continuous skills development are available. This advancement indirectly contributes to attaining Sustainable Development Goal 4, which focuses on ensuring Quality Education (SDG 4).

1. Introduction

In our rapidly advancing digital era, technology is indispensable across various facets of life, with education being one of the prime areas impacted (Anh, Whelan & Umair, 2022). Integrating technology into educational settings has fundamentally transformed the interactions between students and teachers as they engage with learning materials. This shift has facilitated new methods of communication and collaboration, allowing for a more dynamic learning environment (Selwyn, 2023). Digital work is not a recent phenomenon; its origins can be traced back to the 1990s when the internet began influencing the public and private sectors. As Lopez, Erro, and Gomez (2020) defined it, digital work encompasses a broad spectrum of online activities, interactive collaborations, and sophisticated virtual documentation systems that enhance educational processes. Despite these advancements, the education sector grapples with the significant hurdles this digital transformation brings. All stakeholders, including students, educators, and administrators, must effectively cultivate adaptability in utilizing various digital tools and technologies. While technology integration in education has been discussed for decades, its implementation has often faced limitations due to historical resistance and systemic challenges, underscoring the need for a more comprehensive approach to embracing these innovations.

Selwyn (2023) indicates that technology integration in education promotes an innovative and critical teaching and learning approach. Eleven shifts are designed to transform the educational system per the Education Blueprint goals. Specifically, shift 7 focuses on empowering students through technology to improve Malaysia's learning quality. A 2010 study by the Ministry showed that 80% of teachers use ICT for under one hour weekly. UNESCO's 2012 findings globally reveal that ICT can enhance knowledge acquisition and foster higher-order thinking skills. This highlights the need for technology acceptance among educators, including school officials, principals, and teachers (Malaysia Education Blueprint 2013-2025). Universities are also adapting to these changes, launching various initiatives to integrate technology into teaching and learning effectively. Examples include e-learning platforms like Moodle, mobile applications, and digital resources that improve campus education. However, the success and acceptance of such technologies greatly depend on students' readiness and attitudes towards them (Conger, Murimi & Blanke, 2024; Sullivan, 2024). Thus, understanding the factors influencing technology acceptance is vital to maximising its potential among students.

2. Problem Statement

Engaging with technology presents a considerable challenge, often becoming a stressor for individuals struggling to integrate it into their lives. Resistance to new tech can lower quality of life and lead to technostress (Senreich, Straussnes & Steen, 2019). LeRoy, Kaufmann, and Lane (2023) emphasize the need for technology to align closely with the organization’s goals and strategies. This alignment is vital for managing technology use by considering who will use it, how it will be implemented, who will manage it, the specific tools utilized, and the technology's impact on human life quality. Despite the various technological resources provided by the university, some students still fail to engage fully with technology in their studies. Issues noted include a lack of technological skills, negative perceptions of tech use, and infrastructure problems like unreliable internet access (Arslan et al., 2022). Additionally, cultural influences, socioeconomic status, and individual preparedness significantly affect students' acceptance levels. If these concerns are not addressed, they could undermine the learning experience and the success of the university's technology initiatives.

In education, technological knowledge is essential for fostering educational literacy. However, teachers may experience stress when implementing technology, mainly due to redundant and complex tasks (Arslan et al., 2022). Research by Oliver et al. (2010) revealed that university students' acceptance of technology is variable. Those with access to devices and dependable internet connections adapt to technology readily, while those without such resources often view technology as a hurdle in their learning. Moreover, Munir et al. (2024) emphasise that various perceptions and factors, including knowledge and skill limitations (Ma, 2024), challenges from rapid technological changes (Li et al., 2024), emotional responses, mental readiness (Wei et al., 2024), and other unknown influences, affect technology acceptance.

The factors explained in this study remain unclear and need further clarification to uncover new insights about the student factors being examined. This research will also analyze how technology acceptance influences academic performance. Previous studies have produced mixed results, showing an inconsistent pattern suggesting technology can significantly impact educational outcomes (Lefrid et al., 2023). Conversely, some viewpoints claim that academic performance has suffered due to technology. Aidinlis (2024) notes that

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such a decline may stem from technology misuse, negligence, and cultural adjustment. Consequently, this study seeks to assess how the reliability of past studies can be integrated with this research. As part of this study, Figure 1 illustrates the conceptual framework designed to align with the objectives, which involve assessing students' technology acceptance levels, identifying the factors influencing that acceptance, and investigating the impact of technology acceptance on academic performance.

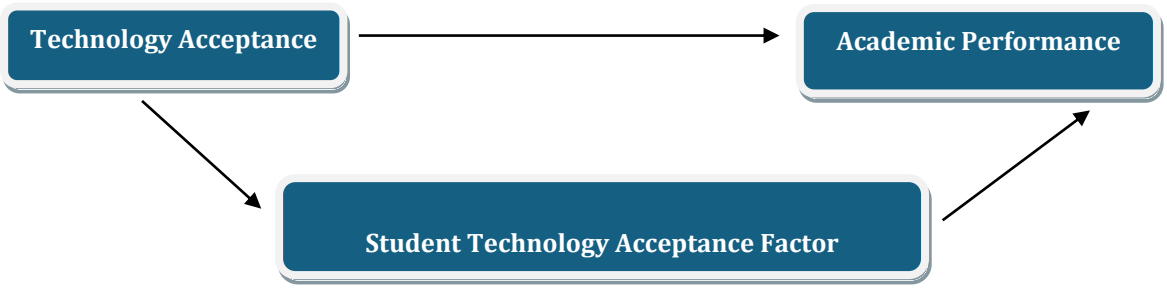

Figure 1 Research Framework

3. Research Objective

This research study is focused on three primary objectives. The first objective is to provide a comprehensive overview of the preparedness of students on our campus to adopt and integrate technology into their educational experiences effectively. This includes assessing their familiarity with various digital tools and resources and their willingness to engage with technology in a learning context. The second objective examines internal and external factors influencing students' technology utilisation. This encompasses an analysis of their technological proficiency, personal attitudes towards technology and learning, and the extent and quality of the support infrastructure available, such as access to high-speed internet, training resources, and technical assistance. Finally, the third objective evaluates the impact of successful technology implementation on students' academic performance. This includes exploring whether integrating educational technologies, such as online learning platforms, digital collaboration tools, and interactive resources, leads to measurable improvements in grades, engagement levels, and overall learning outcomes.

i. Investigating the level of technology acceptance among students
ii. Examining the factors that influence technology acceptance among students
iii. Analysing the level of academic performance based on technology acceptance among students

4. Research Significance

This study makes significant contributions to both academic scholarships and practical applications. From an educational perspective, it enriches the literature concerning technology acceptance within higher education, specifically focusing on Malaysia. The findings from this research provide valuable insights and serve as a crucial reference point for future investigations to understand technology acceptance and the ongoing advancements in educational practices. This study deepens our understanding of the subject by highlighting the factors influencing technology adoption in Malaysian universities. It paves the way for further research to explore educational technology integration's nuances.

This research study offers significant and actionable insights tailored explicitly for university administrators, educators, and policymakers, aiming to foster an environment of increased technology acceptance among students. For instance, the findings of this study can assist universities in accurately identifying the specific obstacles and deficiencies that students face when engaging in technology. This understanding allows institutions to design and implement targeted training programs and support services that directly address these challenges. Moreover, this study is particularly valuable for educators as it provides them with strategies for effectively incorporating technology into their teaching methodologies. By doing so, they can significantly enhance student engagement and ultimately improve learning outcomes. This is essential in today's increasingly digital learning landscape, where the ability to navigate and utilize technology effectively plays a crucial role in students' academic success (Boateng, 2023).

From the students' viewpoint, this research significantly deepens the comprehension of technology's vital role in the educational landscape. By highlighting the various technological resources, students are better equipped to leverage these tools effectively to enhance their learning experiences. This understanding is fundamental, as the impact of technology in education extends beyond the confines of university classrooms; it also serves as a critical factor in preparing students for a job market that increasingly prioritises technological proficiency and digital skills. The key objective of this study is to contribute to achieving Sustainable Development Goal 4, which focuses on ensuring inclusive and equitable quality education for all. By illustrating the importance of integrating technology into educational frameworks, this research aims to foster an environment where students can thrive academically and professionally, thus aligning educational practices with the demands of a rapidly evolving, tech-driven world.

5. Literature Review

Research on technology acceptance has evolved quickly, resulting in various models and theories that aim to understand the factors that shape users' attitudes, intentions, and behaviors toward technology. This progress has laid the groundwork for many studies, especially in education and technology adoption in universities. A fundamental model often cited by scholars is the Technology Acceptance Model (TAM), created by Davis in 1989. This model has become crucial for examining technology acceptance and use across various contexts (Davis et al., 1989). TAM identifies two key factors influencing technology acceptance: perceived usefulness and perceived ease of use. Perceived usefulness reflects an individual's belief that technology can improve their work or learning efficiency.

For example, students feel that e-learning platforms and flight simulation tools can improve their academic success. On the other hand, perceived ease of use relates to how users perceive technology in terms of its learnability and user-friendliness, especially regarding the effort involved in utilizing it. Both factors play a crucial role in shaping an individual's attitude towards technology, subsequently impacting their intentions and behaviors related to its usage (Matsekoleng, Mapotse, & Gumbo, 2022). For university students, the Technology Acceptance Model (TAM) is particularly relevant for assessing the acceptance of digital learning resources, including e-learning systems and simulation software used in their programs (Venkatesh et al., 2003). This model provides universities with valuable insights into students' obstacles when engaging in technology and offers approaches to enhance their educational experiences.

In 2003, Venkatesh et al.(2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT), which builds on the Technology Acceptance Model (TAM) by adding performance expectancy, effort expectancy, social influence, and facilitating conditions. UTAUT is considered a more complete model as it accounts for contextual factors impacting technology acceptance, such as organizational support, technology infrastructure, and peer influence. Venkatesh et al. (2003) showed that UTAUT better predicts user behavior than previous models (To et al., 2021). Numerous social and technical factors greatly influence students' acceptance of technology. UTAUT is a strong framework for understanding how external influences, like institutional support and peer encouragement, affect students' choices to adopt technology in their learning. For example, when students view campus technology infrastructure as adequate and receive support from peers, they are more inclined to embrace and utilize digital learning tools. This study helps universities identify both opportunities and challenges in improving technology acceptance among students.

A study by Mohd Shafie et al. (2022) explored how Malaysian university students accept e-learning. Findings indicated that perceived usefulness and ease of use significantly influence e-learning acceptance, aligning with the Technology Acceptance Model (TAM). The research also emphasized the roles of social norms and trust in technology, illustrating how cultural elements and local contexts affect user perceptions. In the university environment, the students' dependence on institutional support and cultural factors concerning technology acceptance are vital aspects that deserve focus. The conclusions from this study are particularly valuable for universities aiming to improve their approaches to tech infrastructure and training, enhancing the overall effectiveness of technology in education. Furthermore, Sultan Hammad and Mohd Shafie (2020) developed the Technology Readiness Index (TRI), a framework to assess an individual's technological readiness. The TRI evaluates four key dimensions: optimism, innovation, discomfort, and distrust.

Optimism and innovation showcase positive aspects, indicating an individual's willingness to embrace technology. In contrast, discomfort and distrust highlight negative aspects that reveal anxiety and skepticism towards using technology. This study shows that those who exhibit greater optimism and innovation are more likely to accept and use technology. Additionally, the Technological Readiness Index (TRI) serves as a tool to

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assess students' preparedness for learning technologies like flight simulation software or digital learning applications. The study also helps identify students' challenges and barriers, such as worries about technology's complexity or doubts about its effectiveness. By evaluating students' readiness levels, educational institutions can create more effective strategies for introducing new technologies and facilitating their successful adoption by students (Mohd Sobhi, 2014).

In conclusion, these four studies provide a robust theoretical and empirical framework for understanding technology acceptance among students. The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) establish a solid foundation for evaluating the key factors influencing technology acceptance. Meanwhile, the research conducted by Mohd Shafie et al. (2022) underscores the significance of cultural factors and the local context. The Technology Readiness Index (TRI) further aids in identifying the levels of readiness and potential barriers that students may encounter. By integrating these perspectives, this study offers a more comprehensive and strategic approach to enhancing technology acceptance among students and maximising its benefits in the educational landscape.

6. Methodology

This study adopts a quantitative approach through a questionnaire created and distributed via Google Forms among university students. The questionnaire method is widely used for data collection in quantitative research. The researcher has chosen Universiti Tun Hussein Onn Malaysia (UTHM) as the study location. As a pre-test, the study included only 57 respondents. The primary purpose of this pre-test is to evaluate the reliability of the questionnaire before a larger-scale study in the future. The study spans various faculties to capture diverse perspectives and obtain data that genuinely represent the UTHM student population. Given the number of respondents, the results are expected to clarify the level of technological acceptance among UTHM students and the factors affecting this acceptance. The questionnaire consists of 30 targeted items corresponding to the three study objectives, with each objective containing 10 questions. Respondents will answer each question using a Likert scale to ensure accurate and detailed feedback. According to Rosenthal et al. (2025), the Likert scale enables precise measurement by reflecting respondents' opinions and perceptions in their answers.

This research primarily examines the pre-testing stage of the study instrument, and consequently, the validation process has not yet occurred. The outcomes of this study will lay the groundwork for creating instruments for the subsequent research, which will encompass a larger respondent sample. The validation process will be conducted during the development of these instruments in the actual study. Furthermore, this study conducted preliminary analyses to understand how respondents perceive the developed items. Thus, both descriptive and inferential analyses were performed. The analysis targeted three key objectives: evaluating the level of technology acceptance among students, identifying the factors that affect student technology acceptance, and investigating how technology acceptance influences academic performance. Pre-testing also included normality and linearity distribution assessments to enhance the items. These analyses aim to examine the coherence of distribution among the study variables (Matovic & Ovesni, 2021). Through this pre-test, researchers can determine which items may be retained to develop the instrument. Outliers may be identified by results that deviate from normality and linearity distributions.

This study prioritizes data collection accuracy, with each questionnaire item carefully designed to avoid participant confusion. Consequently, the questions are straightforward, easily understood, and directly relevant to technology in education at UTHM. This method ensures that the findings align with the study's objectives and can be expressed more meaningfully. The data gathered will be organized into tables, facilitating the analysis process. Presenting the primary data in this format clearly shows technological acceptance levels and the influencing factors' patterns. Furthermore, the study is dedicated to maintaining the reliability and validity of the questionnaire. The questionnaire distributed will closely reflect the study's aims and the issues being explored. A random sampling method will be used to select respondents, ensuring every student has an equal chance to participate. This strategy is essential for reducing bias and achieving more representative data. By including students from various backgrounds and faculties, we aim to capture multiple perspectives, ultimately improving the study's overall comprehensiveness and validity. This sampling approach is intended to prevent data imbalance, enabling each student group from different faculties to share their insights on the research questions.

7. Findings

Table 1 presents the results related to the study's first objective, assessing students' acceptance of technology. The findings revealed that 30 percent of participants acknowledged a favorable acceptance of technology among students. However, only 20 percent strongly endorsed this view. Conversely, 27 percent of respondents disagreed with the idea of students accepting technology, and 23 percent strongly opposed it. This highlights a notable divide in perceptions of technology acceptance among students, emphasizing the intricate attitudes toward incorporating technology in educational environments.

Table 1 Objective 1: Investigating the Level of Technology Acceptance among Students

The level of technology acceptance among students (57 respondents)	Item	Likert Scale			
		Strongly Agree	Agree	Disagree	Strongly Disagree
	Item 1	11	20	19	7
	Item 2	15	18	11	13
	Item 3	14	12	17	14
	Item 4	12	16	17	12
	Item 5	11	14	12	20
	Item 6	9	17	17	14
	Item 7	16	18	12	11
	Item 8	13	14	16	14
	Item 9	10	22	14	11
	Item 10	9	21	17	10
Percentage Cumulative		120/570 X 100 =20	172/570 x 100 = 30	152/570 x 100 = 27	126/570 x 100 =23

Table 2 presents the findings related to the study's second objective, providing a detailed analysis of respondents' perceptions regarding the factors that influence students' acceptance of technology. The results revealed that 26.5 percent of participants strongly agreed that identifiable factors impact this acceptance. Furthermore, 23.5 percent supported this viewpoint, indicating significant recognition of the key elements in students' technology adoption. In contrast, the proportion of those who disagreed was relatively lower. Specifically, 24.5 percent of respondents disagreed, while 25.5 percent strongly disagreed that such influencing factors exist. Crucially, the combined percentage of those who agreed or strongly agreed surpassed those who disagreed or strongly disagreed, suggesting that most participants acknowledge the essential role various factors play in fostering a positive attitude toward acceptance among students.

Table 2 Objective 2: Examining the Factors that Influence Technology Acceptance among Students

Factors that influence technology acceptance among students (57 respondents)	Item	Likert Scale			
		Strongly Agree	Agree	Disagree	Strongly Disagree
	Item 1	14	13	19	11
	Item 2	13	21	10	13
	Item 3	17	15	12	14
	Item 4	14	18	15	10
	Item 5	11	12	14	20
	Item 6	17	13	13	14
	Item 7	25	11	17	14
	Item 8	13	16	12	16
	Item 9	11	8	17	21
	Item 10	16	13	12	16
Percentage Cumulative		151/570 X 100 = 26.5	139/570 x 100 = 23.5	141/570 x 100 = 24.5	149/570 x 100 = 25.5

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Table 3 presents the analysis results regarding the correlation between technological acceptance and academic performance. The data reveals that 27.7% of respondents agree that students' acceptance of technology significantly enhances their academic outcomes. Additionally, 26.3% of participants strongly endorse this viewpoint, underscoring the perceived value of technology in achieving educational success. Conversely, 21.2% of respondents disagreed, claiming they do not see a substantial connection between technological acceptance and academic performance. Furthermore, 24.8% of students expressed similar skepticism, questioning the belief that acceptance positively influences learning results. This mixed feedback reflects diverse student perceptions about the role of technology in their academic achievements, highlighting the challenges associated with effectively integrating technology into education.

Table 3 Objective 3: Analyses the Level of Academic Performance based on Technology Acceptance among Students

The level of academic performance based on technology acceptance among students (57 respondents)	Item	Likert Scale			
		Strongly Agree	Agree	Disagree	Strongly Disagree
	Item 1	13	19	8	17
	Item 2	17	18	10	12
	Item 3	10	16	17	14
	Item 4	14	12	14	17
	Item 5	15	21	9	12
	Item 6	20	12	12	13
	Item 7	20	12	11	14
	Item 8	12	23	11	11
	Item 9	15	15	15	12
	Item 10	14	12	14	17
Percentage Cumulative		150/570 X 100 = 26.3	158/570 x 100 = 27.7	121/570 x 100 = 21.2	139/570 x 100 = 24.8

7.1 Distribution of Pre-Test Analysis of Research Items

Figures 1 to 3 demonstrate the distribution of the pre-test analysis for the study items. Each figure is tagged according to the scales employed in the research: Label A represents "strongly agree," Label B indicates "agree," and Label C stands for "disagree." Label D signifies "strongly disagree." These figures align with the research's first, second, and third objectives. The objectives are designed to evaluate the level of technology acceptance among students, identify the factors affecting that acceptance, and analyze the relationship between technology acceptance and academic performance. The distribution trends for these objectives show significant differences. The first objective shows an initial upward trend followed by a subsequent downward trend. The second objective reflects a downward trend that later shifts upward. Lastly, the third objective displays a slight upward trend, followed by a decrease and a rise. These patterns suggest that the respondents understood and answered the developed items accurately and sincerely. The noted differences emphasized that the participants engaged thoughtfully with the inquiries. As a result, further research to create additional instruments will be pursued.

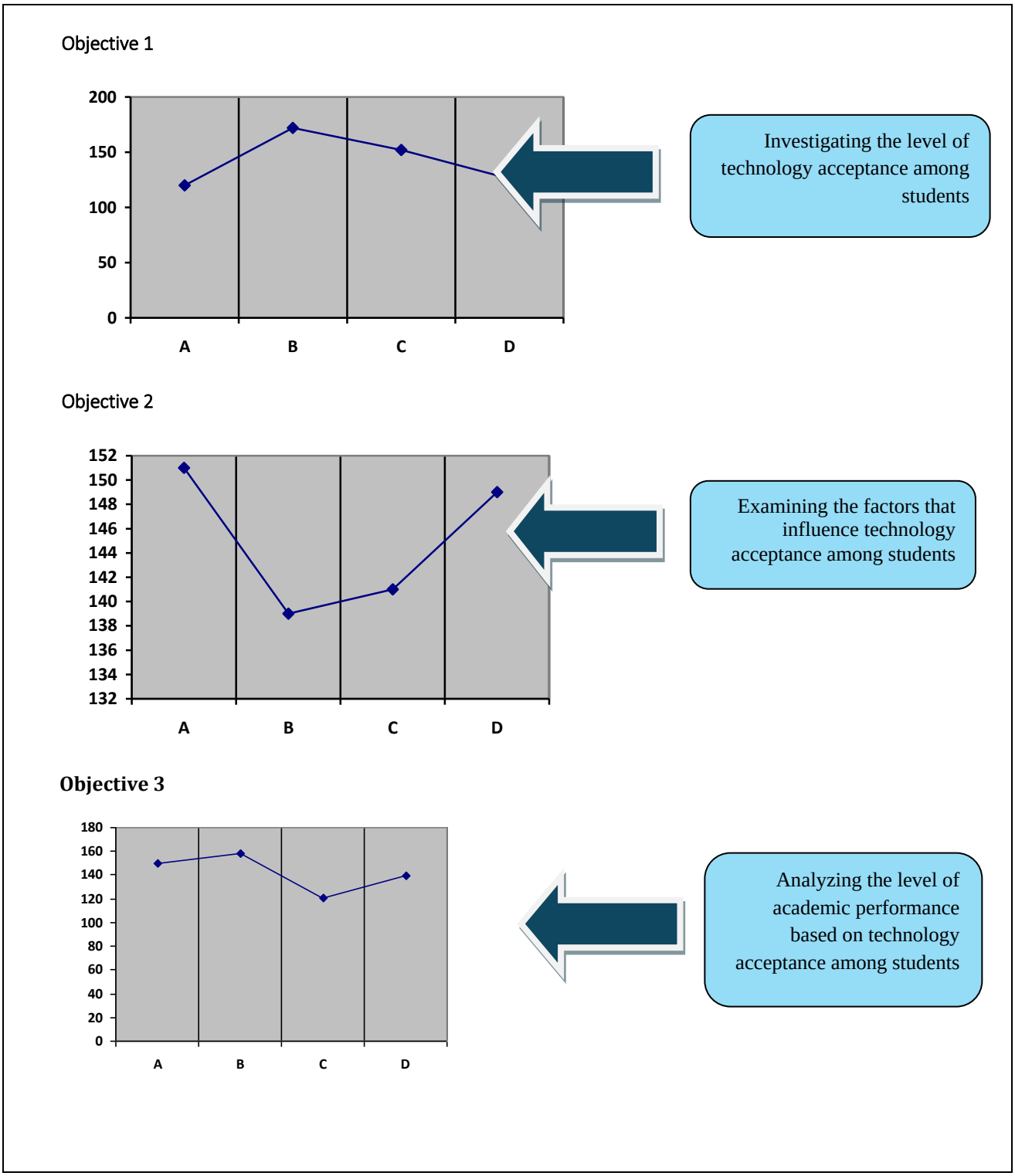

Figure 2 Distribution of Study Findings According to Objectives

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8. Research Discussion

The results from the pre-test conducted on the three study objectives show that most respondents (30%) agreed on technology acceptance among students for the first objective. Conversely, 27% disagreed, and the "strongly agree" and "strongly disagree" responses comprised 20% and 23%, respectively. This data demonstrates a broad range of student views on technology acceptance, revealing favorable opinions and obstacles. Most students view technology as vital for their education, particularly in improving access to information and enhancing academic performance. However, some students feel less at ease with technology or use it infrequently, indicating the need for a more inclusive and thorough approach to technology integration in educational settings. Overall, student feedback is predominantly positive about using technology for learning. It is seen as an essential resource for improving academic quality, particularly when obtaining supplementary information and deepening the understanding of concepts. Despite technology's ability to broaden access to knowledge and enhance learning, some challenges remain. For instance, some students perceive that technology does not always facilitate learning, potentially due to the shortcomings of specific applications that fail to fulfill their needs or their difficulties adjusting to new technologies.

In recent years, online learning has gained considerable attention and is generally well-received. Many students appreciate the flexibility that online learning offers, particularly concerning time and location. However, it is crucial to acknowledge that online learning cannot fully replace traditional in-person instruction. This indicates that hybrid learning experiences, which combine technology with face-to-face interaction, might be more effective in meeting students' needs and achieving optimal educational results. Several key factors affect students' adoption of technology in their studies, including device accessibility, user-friendliness, availability of technical support, and personal qualities such as self-motivation. Most students indicate adequate access to electronic devices and internet connectivity, which is vital for utilizing technology in their learning. However, some students, notably those from underprivileged backgrounds, face access challenges. This highlights the necessity of enhancing broader and more reliable technological access, especially for students needing extra support.

The second objective reveals that a notable percentage of respondents either strongly agree (26.5%) or agree (23.5%) that various factors play a role in technology acceptance. However, there are also significant opposing views, with 24.5% disagreeing and 25.5% strongly disagreeing with the idea that multiple factors influence technology acceptance among students. Technical support stands out as another critical issue needing attention, as many students report that the assistance provided by the university is inadequate. This shortfall not only hampers their learning experiences but also reduces the effectiveness of technological tools in enhancing their educational journeys. To improve the situation, universities must boost technical support by offering continuous technology training and prompt help when students face technical challenges. Additionally, the ease of using technology significantly affects student acceptance. Most students find the technology provided by the university to be user-friendly. However, opinions vary about how efficiently they can master new technologies. While many students believe that learning new tools requires time, some argue that this process is straightforward. This difference may relate to students' diverse levels of exposure and familiarity with technology. Moreover, personal factors like self-motivation are identified as crucial for technological acceptance. However, the costs associated with electronic devices and students' tendency to stick to familiar technologies may hinder their willingness to explore innovations.

The study's third objective examines the relationship between academic performance and students' acceptance of technology. Findings showed that 26.3 percent of students agreed, and 27.7 percent strongly agreed on the positive impact of technology on their learning experience on campus. In contrast, 21.2 percent disagreed, and 24.8 percent strongly disagreed that technology significantly enhanced academic performance. The effect of technology on academic success varied according to its acceptance. The research highlighted that technology improves students' understanding, efficiency, and confidence in educational tasks. Numerous students recognized that technology facilitates access to learning materials, speeds learning, and promotes collaboration with classmates. This indicates that technology can enhance student productivity, especially in collaborative or group learning settings.

While technology offers significant education benefits, several challenges still impede students' overall experiences, especially regarding time management and learning stress. Many students reported that, instead of simplifying their tasks, technological tools often complicate their scheduling abilities. This points to a clear need for improved self-management skills among students to effectively utilise these resources. Additionally, the challenges of adapting to new technologies seem to amplify the pressure many faces. For example, shifting to online platforms or educational software can present a steep learning curve that triggers stress. Furthermore,

some students experience intense pressure to achieve academic success while depending on these tech tools, increasing their performance anxiety. This complex relationship between technology and education demands thoughtful support for students adjusting to these changing environments.

In summary, technology is considered an essential resource in education. However, the extent to which students adopt technology largely depends on how effectively it addresses their needs and on available support. To fully leverage technology's advantages for all learners, it is crucial to implement comprehensive strategies, including enhanced technical assistance, elimination of cost barriers, and ongoing training for practical use. Moreover, the use of technology should be paired with approaches that alleviate negative consequences like learning-related stress and time management difficulties, ensuring it improves academic outcomes and fosters student well-being.

9. Conclusion

This study assesses how well students on campus accept technology and identifies the factors influencing this acceptance. It also examines the connection between technology acceptance and students' academic performance. The study has successfully met its objectives, producing relevant and extensive findings. It begins by emphasizing the importance of technology in higher education, pointing out that tools such as online learning platforms and mobile applications significantly enhance the learning experience. However, the extent to which students adopt this technology varies due to individual skills, attitudes, and available infrastructure. The research shows that despite universities' technological support, students' acceptance of these tools is inconsistent. Significant challenges include insufficient technical skills, negative perceptions, and internet access issues. Moreover, socioeconomic and cultural backgrounds also affect acceptance. The findings suggest that cultivating technology acceptance requires a more structured approach and comprehensive support to overcome these barriers effectively. The study found that most students favour technology use, although some face challenges with specific technical skills. Key elements influencing technology acceptance include ease of use, self-motivation, and access to technical support. Additionally, the research revealed a positive correlation between technology acceptance and enhanced academic performance among students. These results have significant implications for educational research and practical application. Academically, this study contributes to the existing literature on technology adoption in Malaysia's higher education sector. Practically, the outcomes can aid universities in developing more effective strategies to promote technological usage. For example, management could enhance technical support and offer student skill training. However, the study has limitations. The sample size was small, consisting only of students from one university. Furthermore, questionnaires may not fully capture students' experiences, potentially limiting the generalizability of the results to other university populations. Future research could expand its scope by including students from various universities in Malaysia, providing a more comprehensive perspective. This would also enable a thorough investigation of how different technological initiatives can improve students' learning experiences. Lastly, it is crucial to thoughtfully evaluate the role of university management in enhancing technology infrastructure to ensure that digital interventions positively impact the educational environment on campus.

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Conflict of Interest

The authors state that there are no conflicts of interest related to this paper's publication.

Author Contribution

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This journal features contributions from multiple authors. The primary author handled writing, literature searches, distribution, and analysis of percentage findings. The second author supports literature data searches, data collection, and descriptive analysis. Together, they make significant and articulate contributions.

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