



Exploring the Influence of Perceived Usefulness and Perceived Ease of Use on Technology Engagement of Business

Administration Instructors

Jaysone Christopher Bancoro

Negros Oriental State University

Corresponding Author: Jaysone Christopher Bancoro jaysone0611@gmail.com

ARTICLE INFO

Keywords: Technology Integration, Business Education, Technology Engagement, Technology Utilization, Instructional Technology

Received : 5 February

Revised : 18 March

Accepted : 23 April

©2024 Bancoro: This is an open-access article distributed under the terms of the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/)



ABSTRACT

The increasing prevalence of technology in educational settings, driven by advances in digital tools and changing pedagogical paradigms, has made its integration vital, particularly in business education, to prepare students for success in dynamic environments. The pandemic further accelerated the adoption of flexible learning modalities, emphasizing the necessity for increased adaptability and resilience in traditional learning environments, and underscoring technology's indispensable role in education. The findings indicate a strong agreement among respondents regarding the usefulness and ease of using technology in teaching contexts, with mean scores reflecting high levels of agreement across various statements. Notably, instructors perceive technology as highly useful in teaching and generally find technology easy to use. However, the cognitive challenges associated with its integration are acknowledged, particularly concerning the mental effort required. The study reveals widespread adoption of technology for instructional purposes among respondents, with video conferencing, learning management systems, and collaboration platforms being the most commonly used tools. The analysis of the relationship between technology engagement and technology utilization suggests that perceived usefulness and ease of use do not significantly impact engagement with technology in educational settings

INTRODUCTION

In recent years, the integration of technology into educational settings has become increasingly prevalent. It is driven by advancements in digital tools, changing pedagogical paradigms, and the growing recognition of technology's potential to enhance teaching and learning experiences. Within the realm of business education, where the development of practical skills and critical thinking abilities is paramount, the utilization of technology platforms by instructors has emerged as a pivotal aspect of pedagogical practice (Ahmed & Opoku, 2022). Business education programs have the purpose of preparing students with the skills and competencies that they would require to succeed in the continuously changing and unpredictable corporate world. Therefore, effective integration of technology in the business education curriculum is vital for providing students with skills to perform in complex and technology-laden workplaces where digital literacy and technological aptitude become key.

The research gap lies in the insufficient understanding of how perceived usefulness and perceived ease of use impact the technology engagement of business administration instructors. Although some studies have touched on this relationship, there is a lack of comprehensive exploration within this professional context. Addressing this gap can enhance teaching practices and educational outcomes by informing interventions aimed at optimizing technology integration. Understanding these factors can maximize the benefits of technology in educational settings, presenting an opportunity to deepen the understanding of how technology shape instructional practices in the digital age.

LITERATURE REVIEW

Integration of technology in the educational milieu has witnessed considerable growth in recent years. Initially, technology was used as a supplementary tool, with educators incorporating basic tools such as projectors and audiovisual aids to enhance classroom teaching (Haleem et al. 2022). Yet due to the fast rise of technology, especially through personal computers, the internet, and digital devices, the role of technology particularly in education has evolved significantly.

The pandemic also forced educational institutions around the world to adopt flexible learning modalities. With the new normal, traditional methods of in-person teaching became out of reach or impossible. As a result, schools quickly adopted flexible learning approaches such as online classes and hybrid models, as well as remote instruction (Pregowska et al., 2023). This shift was not only a reaction to the pandemic's immediate challenges but also a reflection of the need for increased adaptability and resilience to unforeseen disruptions in traditional learning environments.

Another example of the trend endorsed recently for technology integration is blended learning. It implies a combination of face-to-face learning, with an online resource and practical activities, to cater to the diverse needs of different learners with varied learning styles (Kumar et al., 2021). In the business sector, as the need for data-driven decision-making arises, there has been an upsurge in data analytics tools as well as techniques integration in curricula (Ramakrishna et al., 2022). This allows students to acquire skills in data

collection, analysis as well as interpretation of data for planning. Another growing practice adapts business simulation games and gamified learning experiences to provide the students with the chance to be involved in real-life situations helping them close the gap between the knowledge and pure theory and the skill that they acquire within their students' lives (Beranič & Heričko, 2022). Moreover, the adoption of online work tools such as video conferencing applications and cloud collaboration products enable teamwork and project management with geography being not a factor. Technological integration thereby covers not only the use of the tools but also the training for students to obtain all workplace digital skills including electronic communication, task management, and online collaboration platforms. Furthermore, adaptive learning technologies – as the name itself suggests – allow the delivery of a learning experience that is customized to a particular student (Cavanagh et al., 2020). It takes into consideration the progress and specific pace of each student, constantly using the data gathered to provide data-driven targeted delivery of instructions and support.

Instructors in business education courses utilize a diverse range of technology platforms, influenced by institutional resources, pedagogical preferences, and course requirements. Common platforms include Learning Management Systems (LMS) like Moodle, Blackboard, Canvas, and Google Classroom, facilitating content dissemination, interactive discussions, and student evaluation (Sato et al., 2023). Presentation software such as Microsoft PowerPoint, Google Slides, and Prezi enhance multimedia presentations to aid student comprehension (Nwangwu et al., 2021). Online collaboration tools like Google Docs, Microsoft Teams, and Slack promote real-time collaboration and communication among students (Aithal & Aithal, 2023). Video conferencing software like Zoom, Skype, and Google Meet facilitates interactive engagement regardless of geographical constraints (Biliuk et al., 2023). Course-specific software, including QuickBooks and Tableau, imparts specialized skills to students, while social media platforms like Twitter and LinkedIn enrich learning experiences through communication and resource sharing (Capriotti & Zeler, 2023). Online assessment tools such as Google Forms and Quizlet streamline evaluation processes and student progress monitoring (Biçer & Tekinarslan, 2023). This diverse array of technology platforms underscores instructors' efforts to enhance teaching and learning experiences, catering to diverse learning needs and fostering student engagement and comprehension.

Eze et al. (2021) examined the attitudes of 418 electrical/electronics technology education teachers in Nigeria towards mobile learning, revealing positive influences of perceived ease of use, disposition, psychological well-being, and perceived usefulness on actual mobile learning usage, while noting a negative impact of technical teacher training on perceived ease of use. The study underscores the significance of factors such as technical teacher education training and psychological well-being in shaping perceptions of mobile learning's ease of use and usefulness in higher institutions. On the other hand, Encarnacion et al. (2021) evaluated the effectiveness of E-Learning in the Undergraduate Program (UGP) and General Foundation Program (GFP) at

Oman Tourism College, Sultanate of Oman, finding positive feedback from both teachers and students regarding its efficacy in enhancing instructional delivery and fostering knowledge acquisition skills. They recommended E-Learning as a promising approach for extending education nationwide through distance learning, advocating for further research encompassing other Higher Education Institutions in Oman to develop comprehensive E-Learning strategies.

The integration of technology into business education courses reflects the dynamic evolution of teaching methodologies and the increasing reliance on digital tools by instructors. Platforms like video conferencing tools, collaboration platforms, simulation software, and data analytics tools are employed to enhance course delivery and student engagement (Yu et al., 2021).

However, effective technology integration faces challenges such as instructor resistance to change, limited access to resources, and compatibility issues between pedagogical approaches and technological tools (Henderson & Corry, 2021; Nwokolo et al., 2023). To overcome these barriers, educators can adopt best practices like employing interactive content, promoting active learning through collaboration, embracing adaptive learning technologies, and integrating real-world applications (Sato et al., 2023). Fostering a culture of innovation and providing training workshops and mentorship programs can empower educators to confidently leverage technology and drive continuous improvement in teaching practices (Kilag et al., 2023).

The relationship among the frequency of use, type of technology, particular functions used, perceived utility, and perceived ease of use in academic settings is difficult to disentangle and reflects an intricate relationship. The frequency of technology utilization is somewhat determined by the type of technology used. LMS (Learning Management Systems) may observe higher usage rates as they play a vital role in course management and content delivery but when it comes to the specialized software or platforms designed for specific subjects, they may be used less frequently but with more depth when applicable. Moreover, the existence of some other features in technologies like interactivity and adaptive learning might also promote their frequency of use as the technology becomes more enjoyable and outcomes are improved.

The perceived usefulness and ease of use are the main variables that stereotype the teachers' attitudes toward incorporating technology. Technologies that are considered desirably useful and completely easy to use are likely to be adopted more often and frequently used in teaching practices. Perceived usefulness is the extent to which the technology is seen to achieve the instructional objectives while perceived ease of use is the justification of how easy or not the technology is used without high effort or technical proficiency. The high levels of usefulness and ease of use can lead to frequent use of the technology. Subsequently, a positive experience of technology use will further enhance these perceptions over time.

The perceived gap in this study lies in its focus on exploring instructors' utilization of technology platforms and their technological engagement, particularly in the context of business education courses. While the research questions address perceived usefulness, perceived ease of use, and the

relationship between technological engagement and these variables, there appears to be a gap in investigating the specific strategies or action plans that can optimize technology integration to enhance academic performance. The study provides valuable insights into instructors' perceptions and engagement with technology. This gap presents an opportunity for future research to delve deeper into identifying and implementing effective strategies that capitalize on the perceived usefulness and ease of use of technology to enhance teaching and learning in business education courses.

The study employs the Technology Acceptance Model (TAM) as its theoretical framework, developed by Fred Davis in the late 1980s, to guide research and interpret findings (Alemayehu & Dhaliwal, 2023). TAM posits that an individual's intention to use technology is determined by perceived usefulness and perceived ease of use. Usefulness refers to the perceived benefit of technology, while ease of use relates to the belief that technology is effortless to operate. TAM provides a structured framework for analyzing the extent to which teachers utilize technology platforms and their impact on performance. Initially, TAM asserts that perceived usefulness strongly influences individuals' intentions to integrate technology (Leso & Cortimiglia, 2022). This study delves into teachers' perceptions of the usefulness of technology platforms. Additionally, TAM underscores perceived ease of use as a significant factor affecting attitudes towards adopting new technology (Madias et al., 2023). This element pertains to individuals' beliefs regarding the ease with which technology can be used seamlessly in their daily routines. The study evaluates teachers' perceptions of the difficulty of using technology platforms by examining factors such as user-friendliness, technical support availability, and training provision. TAM further illustrates how attitudes towards technology shape intentions to use and subsequently influence actual usage behavior. The study investigates the integration of technology in business education, emphasizing its importance in the current educational landscape. It seeks to bridge the gap between theory and practice, offering insights for educators, students, and policymakers. Teachers can enhance their skills by understanding technology's impact on engagement and knowledge retention. The findings can inform curriculum development and strategic planning, fostering a digitally literate workforce.

The general objective of the study is to explore the utilization of technology among instructors in business education courses and propose strategies for enhancing academic performance through effective technology integration. Specifically, this research aims to answer the following questions:

METHODOLOGY

Research Design

A research design is the process of collecting and analyzing data where some models define research design as the logical sequence of steps or activities, from the formulation of problems to the formulation of conclusions or theories that are essential for the design or implementation of a study (Sileyew, 2020). In this paper, quantitative descriptive design research was used to discover to what extent instructors utilize technology platforms in their business education courses, their technological engagement, and the relationship between instructor

use of technology platforms and perceived usefulness and perceived ease of use in business education. The researcher used a descriptive research method to determine, classify, scrutinize, and then arrange the gathered data about the condition and process for the interpretation and analysis of the study. A quantitative study would be the most suitable because it allows for systematic data collection and analysis, allowing the researcher to measure variables and their relationship with each other. It also allows for generalization to a larger population by concluding a group of instructors representing a business education program.

Population and/or Sampling Respondents

The study administered a survey to Twenty Nine (29) Regular Faculty Members of the College of Business Administration, Negros Oriental State University, Main Campus. The sampling process was the complete enumeration approach to ensure the comprehensive coverage of the population. The research incorporated faculty demographic diversity to find a variety of views at large on the role of technology in teaching. The response rates and the reliability of data from this method helped in the formulation of a range of targeted interventions, and suggestions that are meant to develop teachers' effectiveness in the college. Complete enumeration in this case ensures the avoidance of discrimination, promotes inclusivity, and reinforces representativeness in the findings. Initial contact with the college head at the university was done to facilitate access to lists of eligible instructors. Personalized invitations outlining the study's purpose, expected time commitment, and incentives for participation were sent directly to identified instructors. The recruitment and selection process was carefully managed in the study to ensure that recruitment is done ethically and transparently.

Confidentiality measures were implemented, including anonymization of data and removal of identifying information, to protect participants' privacy. Upon conclusion of the study, all collected data were irreversibly deleted from electronic systems, and physical copies were securely shredded. Documentation of data disposal activities were maintained for audit purposes, ensuring compliance with data protection regulations.

Research Instrument

The survey questionnaire utilized in this study, adapted from Teo's (2019) research, consisted of 11 questions, with 6 focused on perceived usefulness and 5 on perceived ease of use. It was made sure that it was sensitive and suited for this study. Participants responded using a Likert-type scale ranging from strongly agree (5) to strongly disagree (1). A rating of "5" (Strongly Agree) corresponds to a range of 4.21 to 5.00, indicating strong agreement with technology's user-friendliness and its positive impact on teaching effectiveness, student engagement, and learning outcomes. Ratings of "4" (Agree), falling within 3.41 to 4.20, signify agreement with technology's general ease of use and utility, albeit with some room for improvement. "3" (Neutral) ratings, spanning 2.61 to 3.40, reflect mixed perceptions or experiences regarding both ease of use and usefulness. Ratings of "2" (Disagree), ranging from 1.81 to 2.60, suggest disagreement with technology's ease of use and its impact on teaching effectiveness and learning outcomes. Lastly, "1" (Strongly Disagree) ratings,

falling within 1.00 to 1.80, indicate strong disagreement with technology's user-friendliness and effectiveness in comparison to traditional teaching methods.

Data Gathering Procedure

Before administering the survey to the participants, a pilot test was conducted with a small group of ten (10) instructors to identify and address any design issues and assess the validity of the survey instrument. Feedback from participants was utilized to enhance the clarity and validity of the survey. This pilot study's results were not included in the main findings but were crucial for refining the assessment instrument and determining the optimal survey duration, which was approximately 15 minutes. Cronbach's Alpha was employed to assess the reliability and internal consistency of the questionnaire, ensuring that its elements aligned effectively and measured the same underlying concept. The pilot study lasted for two (2) days and played a vital role in verifying the effectiveness, thoroughness, user-friendliness, and relevance of the assessment instruments.

Table 1. Cronbach's Alpha Coefficient of Each Factor

Factor	Cronbach's Alpha Coefficient
Perceived Usefulness	6,071527778
Perceived Ease of Use	6,227777778

The survey administration for the final questionnaire spanned two (2) weeks, allowing ample time for instructors to participate. Prior to distributing the questionnaire, explicit consent was obtained to ensure participants understood their rights, emphasizing anonymity and confidentiality. Respectful language was maintained throughout, avoiding offensive or discriminatory terms. Technical issues during data collection were promptly addressed, with clear instructions provided to ensure accurate reporting. Confidentiality assurances were reiterated to encourage honest responses. After data collection, thorough checks were conducted to identify and rectify errors or inconsistencies. Subsequently, the collected data underwent analysis using appropriate statistical methods. The study results, encompassing methodology, findings, and implications for business education practice and research, were compiled. Throughout this process, utmost priority was given to treating the collected data with strict confidentiality.

Statistical Tests Employed

The study's statistical analysis encompassed diverse techniques to probe instructors' technology platform utilization in business education and the link between technological engagement and perceived usefulness/perceived ease of use. Descriptive statistics, including weighted mean and standard deviation, gauged the extent of platform usage and variability in perceptions. Counts and percentages were employed to discern technology types, usage frequency, and special feature utilization, offering a holistic view of technological engagement. Additionally, structural equation modeling (SEM) examined the significant relationship between engagement and perceived usefulness/perceived ease of use, unveiling complex interrelations and potential mediators or moderators. By

modeling the direct and indirect effects between technological engagement, perceived usefulness, and perceived ease of use, SEM enabled the researcher to assess the strength and direction of these relationships.

RESULT

Perceived Usefulness

Table 2. Summary of Responses for Perceived Usefulness

Perceived Usefulness	Mean	SD	Interpretation
1. Using technology will improve my teaching	04.34	01.01	Strongly Agree
2. Using the technology will make me teach more effectively	04.28	01.00	Strongly Agree
3. I can do more things when I use technology	04.38	0,068055556	Strongly Agree
4. I find technology to be useful in my teaching	04.48	0,060416667	Strongly Agree
5. I will use technology in the future	04.41	01.05	Strongly Agree
6. I plan to use technology often	04.00	01.20	Strongly Agree
Overall	04.32	01.02	Strongly Agree

Table 2 presents the mean, standard deviation (SD), and interpretation for each item measuring Perceived Usefulness in the context of teaching. The overall mean for Perceived Usefulness is 4.32, indicating that, on average, respondents strongly agree with the statements regarding the usefulness of technology in teaching. Among the items, the highest mean score is for item 4 ("I find technology to be useful in my teaching"), with a mean of 4.48, suggesting a strong endorsement of the utility of technology in teaching. Conversely, the lowest mean score is for item 6 ("I plan to use technology often"), with a mean of 4.00, still reflecting a high level of agreement but slightly lower than the other items. The standard deviations for each item range from 0.87 to 1.20, indicating relatively consistent agreement among respondents across the items. Overall, the findings suggests that respondents perceive technology to be highly useful in teaching, with consistent agreement across the individual items.

The item "I find technology to be useful in my teaching" was ranked as the highest one among the items measured through Perceived Usefulness which resulted from the consolidation of different factors making up teachers' perceptions. For example, instructors might have directly seen technology's influence on improving personal teaching strategies. This effectiveness can become tangible in various ways including high student engagement or educational process optimization among others. Also, technology might have been in the daily work of instructors and a vital tool for teaching purposes such as designing lesson plans, instruction delivery, learning, and assessment. Such constant technology involvement in teaching may only consolidate the instructors' ideas of its usefulness.

Furthermore, peers' influence and observation can affect instructors' thought processes. Positive experiences shared by colleagues or peers who effectively apply technology to their teaching will not only motivate but also shape new processes for other people (Niemi & Kousa, 2020). Seeing how technology is weaved into pedagogical practices in their professional worlds can

further strengthen instructors' conviction about its value. Teachers' alignment of pedagogical intentions with technology plays a crucial role in achieving positive outcomes, particularly when technology is viewed as complementary to goals promoting active, collaborative, and diverse learning. Beyond individual backgrounds, broader factors such as positive experiences, practical considerations, professional support, and alignment with pedagogical objectives collectively shape instructors' positive perceptions of technology's usefulness in teaching, underscoring the multifaceted nature of their attitudes toward technology in education. Similarly, recent studies have underscored the influence of peer interactions and observations on technology adoption practices (Hodges et al., 2020; Tondeur et al., 2019). The study's findings reinforce the impact of professional support and peer collaboration on instructors' perceptions of technology's utility in teaching.

The findings regarding the perceived usefulness of technology in teaching resonate with recent research in the field. Studies such as Chao et al. (2019) have emphasized the critical role of perceived usefulness in influencing instructors' attitudes toward technology adoption in educational settings. Their research underscores the importance of instructors' perceptions of how technology can enhance teaching effectiveness, which aligns with the high mean scores observed in this study. Furthermore, literature highlights the significance of professional development opportunities and training in promoting effective technology integration among educators (Ertmer et al., 2020; Ottenbreit-Leftwich et al., 2021). Research by Ottenbreit-Leftwich and Brush (2020) emphasizes the importance of ongoing support and mentoring in building teachers' confidence and competence in utilizing technology to support instructional goals. Mishra and Koehler (2021) argue that effective technology integration occurs when educators strategically leverage technology to address specific pedagogical objectives and enhance student learning experiences. These findings support this perspective by highlighting the importance of pedagogical alignment in shaping instructors' perceptions of technology's value in education.

The item "I intend to use technology a lot" having the lowest mean score among the perceived usefulness statements indicate that while some teachers perceive the effectiveness and possibility of technology in their teaching, some probably are not very sure of their willingness to constantly use it in their teaching. This action could also be caused by many other factors. First, teachers may experience fear of the technology related issues, including learning new gadgets or dealing with the defects. Secondly, this might lead to problems of not being able to use the established teaching techniques as the introduction of new technologies can result in major changes in instructional methods. Finally, doubts related to whether the technology will improve the learning outcomes that instructors have set for themselves may lead to hesitation because instructors would find it hard to say for sure if technology is capable of increasing student engagement and retention. Addressing these concerns could help alleviate instructors' apprehensions and encourage more frequent use of technology in teaching.

Perceived Ease of Use

Table 3. Summary of Responses for Perceived Ease of Use

Perceived Ease of Use	Mean	SD	Interpretation
1. I find it easy to get technology to do what I want it to do	4.24	1.02	Strongly Agree
2. Using technology does not require a lot of mental effort	3.66	1.08	Agree
3. I find technology easy to use	4.10	0.90	Agree
4. Technology makes teaching more interesting	4.21	0.86	Strongly Agree
5. Teaching with technology is fun	4.28	0.92	Strongly Agree
Overall	4.10	0.96	Agree

The table above offers insights into the perceptions of Perceived Ease of Use concerning technology among the surveyed individuals, likely instructors. Overall, the mean score for Perceived Ease of Use is 4.10, indicating a general agreement among respondents regarding the ease of utilizing technology in teaching contexts. Among the individual items, the highest mean score is observed for "Teaching with technology is fun" (4.28), closely followed by "I find it easy to get technology to do what I want it to do" (4.24) and "Technology makes teaching more interesting" (4.21). These results suggest that respondents strongly agree with the statements highlighting the enjoyment and utility of technology in teaching. These findings are consistent with research indicating that technology integration can lead to increased student engagement, motivation, and overall enjoyment of the learning process (Davis et al., 2019; Kim & Frick, 2020).

The ease of integrating technology into teaching experienced by instructors can be attributed to several factors. Firstly, technology infusion injects engagement and excitement into the teaching and learning process, introducing dynamic features like multimedia presentations and online collaboration platforms that invigorate classroom interactions for both teachers and students (Karaka-Clarke et al., 2023). This innovation supplements traditional teaching methods. Moreover, technology facilitates increased student interaction and active participation, contributing to the overall enjoyment of teaching by creating engaging discussions. Instructors derive satisfaction from observing students' active engagement with technology, further enhancing their enjoyment of teaching with technology. Additionally, teachers who receive adequate support in technological integration are more likely to perceive teaching with technology as enjoyable, as it enables professional growth and proficiency in technology application (Dogan et al., 2021).

Conversely, the lowest mean score is attributed to "Using technology does not require a lot of mental effort" (3.66), although it still falls within the "Agree" interpretation category. This indicates a relatively high level of agreement but suggests that respondents perceive some level of mental effort required when using technology. On the other hand, the relatively lower mean score for this item highlights the cognitive challenges associated with technology integration in teaching (Tondeur et al., 2019; Mishra & Koehler, 2021). This aligns with recent

literature emphasizing that while technology can offer numerous benefits, its effective integration requires instructors to invest time and effort in learning new tools and instructional strategies (Albion, 2019; Hsu et al., 2020). On the one hand, technology can be a tool for improving learning processes by engaging students and providing them with interactive learning experiences. However, using technology can be overwhelming for teachers if they are not aware of software applications (Stefanile, 2020). Learning to implement these technologies properly can initially be a challenging and effortful process and the instructors will have to study the instructional designs offered by the technology. Furthermore, the level of complexity of tech tools and platforms could be one of the contributing factors to the amount of mental effort people perceive to be spending when using them (Acquisti et al., 2020). Certain technologies will have long learning periods, and some are technical, which could lead to added brainwork for trainers. For example, maneuvering across software interfaces, solving computer problems, or configuring training materials, among other things, may require delicate attention and focus which could be perceived as mental work and technology use. Thus, the constant development of technologies and introduction of new tools and platforms might require instructional staff to continuously update their knowledge and skills.

Technology Engagement

Table 4. Summary of Responses for Technology Engagement

Items	Count	Percentage (%)
Types of technology platform		
Collaboration	10	19.61
LMS	12	23.53
Simulation	2	3.92
Video Conferencing Tools	27	52.94
Grand Total	51	100.00
Frequency		
Daily	5	17.24
Monthly	1	3.45
Occasionally	5	17.24
Rarely	1	3.45
Weekly	17	58.62
Grand Total	29	100.00
Special Features Used		
Assessment Tools	16	19.51
Collaboration	14	17.07
Communication tools	22	26.83
Content Delivery	24	29.27
Data Analytics	4	4.88
Simulation	2	2.44
Grand Total	82	100.00

Regarding various tech platforms, the number one tool used is video conferencing (52.94%), followed by learning management systems (LMS) (23.53%), Collaboration platforms (19.61%), and simulations which come last (3.92%). The data implies that a large number of conference tools have been in active use. This is probably connected with a widespread shift to online teaching and probably also the COVID-19-forced virtual schools. Digital learning environments of an LMS kind typically also exist as they imply the significance of these environments in helping teaching practice. Collaboration platforms are generally also common in those systems. On the frequency of technology use, most of the respondents have stated they use technologies on a weekly basis (58.62%), then occasionally (17.24%), afterward daily (17.24%), seldom or rarely at one time (3.45%) and the last one is a monthly use (3.45%). Findings suggest a widespread adoption of technology for instructional purposes among the respondents, with the majority indicating that they use technology on a weekly basis. Additionally, a significant portion of instructors reported using technology daily, further supporting the notion of widespread integration of technology into teaching practices. Into the category of special features used, communication tools and content delivery methods emerge as the most commonly used, with 26.83% and 29.27% of respondents utilizing them, respectively. This suggests a strong emphasis on facilitating communication and delivering content effectively through technology. Collaboration tools are also prevalent, with 17.07% of instructors incorporating them into their instructional activities, highlighting the importance of fostering collaborative learning environments. Assessment tools, although slightly less utilized compared to communication and content delivery, still see significant adoption by 19.51% of respondents, indicating a recognition of the importance of technology in assessment practices. However, data analytics and simulation tools show relatively lower usage rates, with only 4.88% and 2.44% of respondents utilizing them, respectively.

Relationship Between Technology Engagement and Technology Utilization

Table 5. SEM Results for Technology Engagement and Technology Utilization

Dependent Variable	Predictor	Estimate	SE	95% Confidence Intervals		z	p	Interpretation
				Lower	Upper			
Technology Engagement	Perceived Usefulness	0,47083333	0,08888889	-2.62	0,192361111	0,279861111	0,613194444	Not significant
Technology Engagement	Perceived Ease of Use	-0.547	0,08888889	-3.85	0,135416667	-0.325	0,494444444	Not significant

The table above and the path diagram in Figure 1 present the estimates and 95% confidence intervals for the relationship. In this study, the relationship estimate for Technology Engagement and Perceived Usefulness is 0.678, whereas for Perceived Ease of Use, it is -0.547. Neither estimate is statistically important, as indicated by p-values of 0.883 and 0.712 accordingly. Studies by Albion (2019) and Kim et al. (2020) have similarly found that while perceived usefulness and ease of use are important factors influencing technology adoption and acceptance, they may not always directly translate into increased engagement with technology in educational settings. The large confidence intervals as well as non-significant p-values hint that other factors not considered in the analysis may distort an individual's engagement with technology more than considered. Such factors largely remain unknown and need to be explored together with the research community to understand the complexity of this relationship better. Research by Mishra & Koehler (2021) and Hodges et al. (2020) has highlighted the importance of contextual factors, such as institutional support, instructor attitudes, and pedagogical beliefs, in shaping technology integration practices and outcomes.

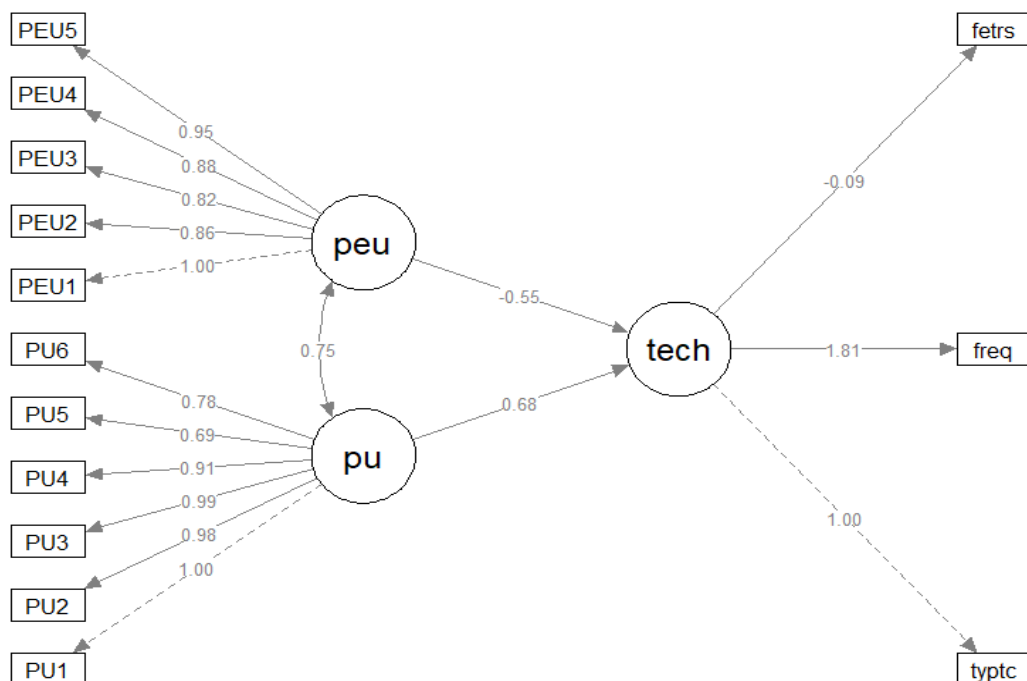


Figure 1. Path Diagram

Optimal Strategies or Action Plans

Educational institutions can support the achievement of good educational outcomes through technology applications. In order to achieve this goal, they should establish interdisciplinary teams composed of educators, administrators, information technology specialists, and instructional designers who will create technology integration plans, assess technological needs, evaluate novel tools and provide ongoing support to implement technology-driven innovations.

Integration of technology standards ought to be clear and should maintain the same standards, while being aligned with the instructional purposes. Addressing teachers' hesitancy towards integrating technology into their teaching requires is also important. Educators can gain the confidence and skills needed to effectively leverage technology in their instructional practices by identifying concerns and providing customized professional development opportunities. Additionally, showcasing success stories and fostering collaboration among teachers can help demonstrate the benefits of technology integration. Fostering openness towards technology is one way to combat hesitancy. Resources need to be allocated to improve infrastructure, extend Wi-Fi connections, and make sure students from all backgrounds have access to the devices and software applications. Implementing incentive programs is a necessity for successful integration of technology into different aspects of teaching and learning. This can include rewards, or incentives to encourage experimentation and creativity. Technology-improved learning spaces should also be incorporated into curriculum designing and course development processes aimed at stimulating active learning, teamwork and critical thinking. The use of Open Educational Resources (OER) should be systemized to provide access to learning materials for free. Thus, teachers should be properly trained to integrate OER effectively into classroom instruction. Collaborations also with professional groups, community alliances, and education sectors can increase the availability of technology resources, mentoring support, and hands-on learning activities. Lastly, mechanisms for continuous improvement and evaluation should be put in place for sustainability purposes.

CONCLUSION AND RECOMMENDATION

This research explores the perspectives of instructors on the effectiveness and convenience of technology tools in teaching, as well as their influence on their engagement. The study finds that teachers believe technology can improve teaching effectiveness. However, they also find it challenging to integrate technology due to the mental work required. The study found no evidence of a connection between the degree of technology involvement and perceived usefulness and ease of use. Although the study suggests that technology utility and convenience are important, these aspects are not influential for instructors integrating technology into teaching practices.

Institutions can enhance technology integration among instructors by mandating training programs to keep them updated on latest technologies and fostering a culture of innovation. This can be achieved through innovation hubs exploring emerging technologies, strengthening infrastructure, and providing technical support. Promoting a learning culture encourages experimentation, risk-taking, and continuous improvement, while teaching digital literacy to students fosters effective digital citizenship. Additionally, institutions can improve outcomes by establishing interdisciplinary teams, implementing clear integration plans, allocating resources, using Open Educational Resources, and collaborating for continuous improvement. Future research should focus on understanding the interactions of individual and contextual factors, alongside technological factors,

to create actionable plans for improving academic outcomes through technology integration.

REFERENCES

- Acquisti, A., Brandimarte, L., & Loewenstein, G. (2020). Secrets and likes: The drive for privacy and the difficulty of achieving it in the digital age. *Journal of Consumer Psychology*, 30(4), 736-758.
- Adonis, J. M. ., Belga, J. B. ., Kwong, M. J. B. ., Naelgas, J. H. Z. ., Sison, G. A. ., & Tamon, C.-J. S. . (2019). Effects of Modern Technology to the Academic Performance of Grade 12 ABM Students of Bestlink College of the Philippines, Academic Year 2018-2019. *Ascendens Asia Singapore - Bestlink College of the Philippines Journal of Multidisciplinary Research*, 1(1). Retrieved from <https://ojs.aaresearchindex.com/index.php/aasgbcjpmra/article/view/1330>
- Ahmed, V., & Opoku, A. (2022). Technology supported learning and pedagogy in times of crisis: the case of COVID-19 pandemic. *Education and information technologies*, 27(1), 365-405.
- Aithal, P. S., & Aithal, S. (2023). Stakeholders' Analysis of the Effect of Ubiquitous Education Technologies on Higher Education. *International Journal of Applied Engineering and Management Letters (IJAEML)*, 7(2), 102-133.
- Albion, P. R. (2019). Teachers' professional learning and changing pedagogical practice: A review of the literature. *Journal of Educational Change*, 20(2), 117-134. <https://doi.org/10.1007/s10833-018-9323-6>
- Albion, P. R. (2019). Teachers' professional learning and changing pedagogical practice: A review of the literature. *Journal of Educational Change*, 20(2), 117-134. <https://doi.org/10.1007/s10833-018-9323-6>
- Alemayehu, D. M., & Dhaliwal, N. K. (2023). Evolution of Technology Adoption Theories and Models: A Review of Literature. *European Economic Letters (EEL)*, 13(5), 1472-1486.
- Alieto, E., Abequibel-Encarnacion, B., Estigoy, E., Balasa, K., Eijansantos, A., & Torres-Toukoumidis, A. (2024). Teaching inside a digital classroom: A quantitative analysis of attitude, technological competence and access among teachers across subject disciplines. *Heliyon*, 10(2).
- Beranič, T., & Heričko, M. (2022). The impact of serious games in economic and business education: A case of ERP business simulation. *Sustainability*, 14(2), 683.
- Biçer, L., & Tekinarslan, E. (2023). Reflections on Online Instructional Technologies and Materials Used During the COVID-19 Pandemic. *Journal of Teacher Education and Lifelong Learning*, 5(2), 890-908.

- Biliuk, O., Stepanenko, O., & Kyrychenko, V. (2023). Modern Tools for Distance Education: Information and Analytical Prospectus. *Futurity Education*, 3(2), 251-265.
- Bradley, V. M. (2021). Learning Management System (LMS) use with online instruction. *International Journal of Technology in Education*, 4(1), 68-92.
- Capriotti, P., & Zeler, I. (2023). Analysing effective social media communication in higher education institutions. *Humanities and social sciences communications*, 10(1), 1-13.
- Cavanagh, T., Chen, B., Lahcen, R. A. M., & Paradiso, J. R. (2020). Constructing a design framework and pedagogical approach for adaptive learning in higher education: A practitioner's perspective. *International review of research in open and distributed learning*, 21(1), 173-197.
- Chao, C. M., Chen, Y. C., Chen, Y. T., & Tasi, Y. H. (2019). Exploring pre-service teachers' intentions to adopt mobile learning. *Interactive Learning Environments*, 27(5-6), 682-695.
- Chao, P. Y., Hsu, Y. S., & Chen, Y. C. (2019). Exploring the relationships between teachers' technological pedagogical content knowledge (TPACK) competencies and teaching beliefs in Taiwan. *Computers & Education*, 137, 104-115. <https://doi.org/10.1016/j.compedu.2019.04.008>
- Chao, P. Y., Hsu, Y. S., & Chen, Y. C. (2019). Exploring the relationships between teachers' technological pedagogical content knowledge (TPACK) competencies and teaching beliefs in Taiwan. *Computers & Education*, 137, 104-115. <https://doi.org/10.1016/j.compedu.2019.04.008>
- Dar, M. A., Kudare, R., Dar, Y. A., Ali, I., & Mohammed, S. (2022). Role Of Projected And Non-Projected Teaching Aids In Teaching Learning Process. *Journal of Positive School Psychology*, 6(10), 1725-1743.
- Davis, N. E., Kim, C., & Frick, T. (2019). A conceptual framework for measuring technology integration proficiency: Understanding pre-service teachers' perceptions of their developing practices. *Technology, Pedagogy and Education*, 28(3), 293-312. <https://doi.org/10.1080/1475939X.2018.1559154>
- Dogan, S., Dogan, N. A., & Celik, I. (2021). Teachers' skills to integrate technology in education: Two path models explaining instructional and application software use. *Education and Information Technologies*, 26, 1311-1332.
- Encarnacion, R. F. E., Galang, A. A. D., & Hallar, B. J. A. (2021). The impact and effectiveness of e-learning on teaching and learning. *Online Submission*, 5(1), 383-397.
- Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2020). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education*, 144, 103672.

- Eze, N. U., Obichukwu, P. U., & Kesharwani, S. (2021). Perceived usefulness, perceived ease of use in ICT support and use for teachers. *IETE Journal of Education*, 1-9. <https://doi.org/10.1080/09747338.2021.1908177>
- Garbin, F. G. D. B., ten Caten, C. S., & Jesus Pacheco, D. A. D. (2022). A capability maturity model for assessment of active learning in higher education. *Journal of Applied Research in Higher Education*, 14(1), 295-316.
- George, B., & Wooden, O. (2023). Managing the strategic transformation of higher education through artificial intelligence. *Administrative Sciences*, 13(9), 196.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275-285.
- Henderson, J., & Corry, M. (2021). Teacher anxiety and technology change: A review of the literature. *Technology, Pedagogy and Education*, 30(4), 573-587.
- Hodges, C. B., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 27.
- Hsu, Y. S., & Chao, P. Y. (2019). Integrating the technology acceptance model and TPACK into a framework for understanding the adoption of mobile technology in education. *Computers & Education*, 128, 27-41. <https://doi.org/10.1016/j.compedu.2018.09.009>
- Karaka-Clarke, T. H. R., Macfarlane, A., & Fletcher, J. (2023). Approaches to Teaching and Learning a Second Language Online. *Waikato Journal of Education*, 28(1), 109-123.
- Kilag, O. K., Miñoza, J., Comighud, E., Amontos, C., Damos, M., & Abendan, C. F. (2023). Empowering Teachers: Integrating Technology into Livelihood Education for a Digital Future. *Excellencia: International Multi-disciplinary Journal of Education (2994-9521)*, 1(1), 30-41.
- Kim, C., Davis, N. E., Alonso-Yanez, G., & Glang, S. J. (2021). Examining teacher technology integration using the technology acceptance model. *Educational Technology Research and Development*, 69(2), 679-703. <https://doi.org/10.1007/s11423-020-09922-0>
- Kim, C., Frick, T., & Lee, D. (2020). Exploring the relationships among teachers' beliefs, ease of use, and technology acceptance: A structural equation modeling approach. *Educational Technology Research and Development*, 68(3), 1469-1491. <https://doi.org/10.1007/s11423-020-09878-1>
- Koh, J. H. L., Chai, C. S., & Tsai, C. C. (2019). Examining the technological pedagogical content knowledge of Singapore preservice teachers with a large-scale survey. *Asia-Pacific Journal of Teacher Education*, 47(1), 60-73.

- Koh, J. H. L., Divaharan, S., Ertmer, P. A., Davis, N. E., Kim, C., Frick, T., Albion, P., Tondeur, J., Mishra, P., Koehler, M. J., Hsu, Y. S., & Chao, P. Y. (2019). Exploring the impact of technology integration on teaching practices: A systematic literature review. *Educational Technology Research and Development*, 67(5), 1145-1184. <https://doi.org/10.1007/s11423-019-09685-x>
- Kumar, A., Krishnamurthi, R., Bhatia, S., Kaushik, K., Ahuja, N. J., Nayyar, A., & Masud, M. (2021). Blended learning tools and practices: A comprehensive analysis. *Ieee Access*, 9, 85151-85197.
- Lacka, E., Wong, T. C., & Haddoud, M. Y. (2021). Can digital technologies improve students' efficiency? Exploring the role of Virtual Learning Environment and Social Media use in Higher Education. *Computers & Education*, 163, 104099.
- Leso, B. H., & Cortimiglia, M. N. (2022). The influence of user involvement in information system adoption: an extension of TAM. *Cognition, Technology & Work*, 1-17.
- Madias, K., Szymkowiak, A., & Borusiak, B. (2023). What builds consumer intention to use smart water meters—Extended TAM-based explanation. *Water Resources and Economics*, 44, 100233.
- Mandasari, B. (2020). The impact of online learning toward students' academic performance on business correspondence course. *EDUTECH: Journal of Education and Technology*, 4(1), 98-110.
- Maramag, F. R. A. B., & Catacutan, K. J. A. TECHNOLOGY-ENHANCED APPROACHES IN TEACHING AND LEARNING BUSINESS COURSES AT A PRIVATE UNIVERSITY IN NORTHERN PHILIPPINES. *Turkish Journal of Physiotherapy and Rehabilitation*, 32, 3.
- Mishra, P., & Koehler, M. J. (2021). What is Technological Pedagogical Content Knowledge (TPACK)? *Journal of Technology and Teacher Education*, 29(2), 385-402.
- Niemi, H. M., & Kousa, P. (2020). A Case Study of Students' and Teachers' Perceptions in a Finnish High School during the COVID Pandemic. *International journal of technology in education and science*, 4(4), 352-369.
- Nwangwu, E. C., Obichukwu, P., Uzuagu, A. U., & Omeh, C. B. (2021). Development of an Interactive PowerPoint Presentation Design Training Package. *The International Journal of Technologies in Learning*, 28(2), 39.
- Nwokolo, S. C., Eyime, E. E., Obiwulu, A. U., & Ogbulezie, J. C. (2023). Africa's Path to Sustainability: Harnessing Technology, Policy, and Collaboration. *Trends in Renewable Energy*, 10(1), 98-131.
- Ottenbreit-Leftwich, A. T., & Brush, T. A. (2020). Teacher beliefs, instructional methods, and the application of technology to enhance teaching and

- learning. In *Handbook of Research on Teacher Education and Professional Development* (pp. 324-347). IGI Global.
- Pregowska, A., Masztalerz, K., Garlińska, M., & Osial, M. (2021). A worldwide journey through distance education—from the post office to virtual, augmented and mixed realities, and education during the COVID-19 pandemic. *Education Sciences*, 11(3), 118.
- Ramakrishna, H., Sarkar, A., & Vijayaraman, B. (2022). Development of an Introductory MBA Course in Business Analytics Using Data-Driven Decision-Making (DDDM) Model. *Journal of Higher Education Theory & Practice*, 22(12).
- Saleh, S. S., Nat, M., & Aqel, M. (2022). Sustainable adoption of e-learning from the TAM perspective. *Sustainability*, 14(6), 3690.
- Sato, S. N., Condes Moreno, E., Rubio-Zarapuz, A., Dalamitros, A. A., Yañez-Sepulveda, R., Tornero-Aguilera, J. F., & Clemente-Suárez, V. J. (2023). Navigating the New Normal: Adapting Online and Distance Learning in the Post-Pandemic Era. *Education Sciences*, 14(1), 19.
- Sileyew, K. J. (2020). Research design and methodology. In *IntechOpen eBooks*. <https://doi.org/10.5772/intechopen.85731>
- Stefanile, A. (2020). The transition from classroom to Zoom and how it has changed education. *Journal of social science research*, 16(7), 33-40.
- Teo, T. (2019). Students and teachers' intention to use technology: assessing their measurement equivalence and structural invariance. *Journal of Educational Computing Research*, 57(1), 201-225. <https://doi.org/10.1177/0735633117749430>
- Tondeur, J., Prestridge, S., van Braak, J., Albion, P., & Sointu, E. (2019). Effects of innovation implementation on teaching and learning practices: A systematic review of mixed-methods research. *Educational Research Review*, 28, 100293.
- Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2019). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development*, 67(5), 1145-1184. <https://doi.org/10.1007/s11423-019-09694-w>
- Yu, Z., Gao, M., & Wang, L. (2021). The effect of educational games on learning outcomes, student motivation, engagement and satisfaction. *Journal of Educational Computing Research*, 59(3), 522-546.