Technology Adoption In Higher Education: Perceptions And Expectations At Citra Bangsa University (Ucb) In The Digital Era

Gerlan Apriandy Manu , ST.,M.Kom

Informatics Education Study Program, Citra Bangsa University, Kupang, Nusa Tenggara Timur, Indonesia.

Abstract

Higher education in the digital era requires effective use of technology. This study aims to formulate a learning technology development strategy at Citra Bangsa University (UCB) based on an analysis of needs and challenges. The research method involves surveys and interviews with lecturers and students to understand their perceptions, experiences, and expectations of learning technology. The results show that lecturers and students see the importance of technology in learning and want improvements in its use. Based on these results, this study recommends enhancing technology infrastructure, developing lecturers' capacity to use technology, expanding digital content, and evaluating and monitoring the use of technology. The conclusions from this study can be used by UCB to formulate a more effective learning technology development strategy in the future.

Keywords: Learning Technology, Higher Education, Digital Content, Distance Learning, Technology Infrastructure.

1. INTRODUCTION

Citra Bangsa University (UCB) is one of the leading higher education institutions in East Nusa Tenggara Province and is committed to providing quality education to its students. In the ever-evolving digital era, the use of technology in education has become a necessity, in line with Davis's (1989) research titled "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," which shows that users' perceptions of the usefulness and ease of use of technology can influence their acceptance of it.

Technological advancements have transformed the educational landscape with the emergence of various innovations such as online learning, platform-based learning, and the use of interactive tools in the learning process. As explained in the research by Miar Faraj Al-Sayyid and Manal Elsayed (2025), the technology acceptance model acts as a mediator in explaining the factors influencing online education. In addition, research by Dian Damayanti et al. (2024) shows the implementation of holistic e-learning education in Junior High Schools. The adoption of learning technology has great potential to enhance accessibility, quality, and effectiveness of education at UCB, in line with the findings in these studies.

The COVID-19 pandemic that has swept the world since 2020 has changed the way we learn and teach. As shown by Gonzalez (2023), physical restrictions and lockdowns have made distance education and online learning an urgent need. In this context, planning for the development of learning technology at UCB becomes increasingly relevant, considering the

importance of supporting effective and interactive distance learning (Bragge et al., 2023).

The challenges and opportunities faced by UCB in the development of learning technology, as shown by Guzzo et al. (2023), are the need to enhance technology infrastructure, develop lecturers' capacity in the use of technology, expand the availability of quality digital content, and ensure effective evaluation and monitoring of the implementation of learning technology.

Research conducted by Al-Fraihat, Joy, and Sinclair in 2020 titled "Factors influencing teachers' intention to use technology: A systematic review of the literature" discusses various factors influencing teachers' intentions to adopt learning technology, such as teachers' perceptions of the benefits of technology, attitudes towards technology, technology skills, and institutional factors influencing the use of technology in learning. By understanding the factors influencing teachers' intentions to use technology, UCB can design more effective lecturer capacity development strategies. By identifying barriers and promoting factors supporting the use of learning technology, UCB can facilitate a broader and more effective adoption of technology in the educational environment.

Also, in the research by Krishna Moorthy et al. (2018) titled "Behavioral Intention to Adopt a Digital Library by the Undergraduates", this research identifies various factors that can influence students' intentions to use digital libraries, such as perceived benefits, perceived ease of use, and attitudes towards use. By understanding the factors influencing students' intentions, UCB can design strategies to increase the adoption and use of digital technology in education. By considering these factors and improving aspects that need to be enhanced, UCB can enhance the student learning experience and

ensure that the implemented learning technology meets student needs and preferences.

Referring to these studies, this research aims to formulate comprehensive planning for the development of learning technology at UCB. With good planning, UCB will be able to harness the potential of technology to enhance the student learning experience, expand accessibility, and improve the quality of education delivered.

Through the analysis of specific needs and challenges and by considering good practices in the development of learning technology at other universities, this research is expected to provide a strong foundation for effective and strategic planning in developing learning technology at UCB. In this context, Barabási and Albert's (1999) research on how complex networks develop and operate and Katoh and Standley's (2013) research on improving performance and usability in software design can provide valuable insights. Thus, this research plays a crucial role in providing a deep understanding of the context, background, and urgency of planning for the development of learning technology at UCB.

2. RESEARCH METHODS

a. Research Location

The subject of this research is Citra Bangsa University (UCB), a higher education institution that is the focus of learning technology development planning. It is located at 17 Manafe Street, Kayuputih Subdistrict, Oebobo District, Kupang City, East Nusa Tenggara Province.

b. Research Procedure

The research procedure for Planning the Development of Learning Technology at Citra Bangsa University includes the following steps:

1. Literature Study: Conduct a literature review related to the development of learning technology in higher education

and best practices in planning the development of learning technology.

2. Needs Analysis: Identify specific needs faced by UCB in the development of learning technology, including technology infrastructure, faculty capacity development, availability of quality digital content, and evaluation and monitoring of learning technology implementation.

3. Data Collection: Collect data through interviews and surveys to gain a deeper understanding of the needs, challenges, and opportunities for the development of learning technology at UCB.

4. Data Analysis: Analyze the collected data to identify patterns, trends, and relevant findings related to the development of learning technology at UCB.

5. Planning Formulation: Based on the results of the data analysis and understanding obtained, formulate comprehensive plans for the development of learning technology at UCB. This planning should include development strategies, implementation steps, human resource development, expansion of digital content, and evaluation and monitoring mechanisms.

c. Data Collection Techniques

In this research, data collection techniques that can be used include:

1. Interviews: Conduct interviews with lecturers at Citra Bangsa University to obtain qualitative information about the needs and challenges of learning technology development.

2. Surveys: Surveys are used by students to obtain quantitative data about perceptions, preferences, and needs related to learning technology. Surveys were conducted by distributing questionnaires to 120 Citra Bangsa University students selected using a random sampling method from May to June 2023. The questionnaire consisted of 30 statements divided into 3 criteria: K1 containing 10 statements to find out the impact of the use of technology in learning on student learning experiences; K2 containing 10 statements to find out whether there is an increase or decrease in interaction between lecturers and students through the use of technology in learning; and K3 containing 10 statements to measure student motivation and involvement in online learning.

d. Data Analysis Techniques:

The collected data can be analyzed using qualitative and quantitative analysis techniques, depending on the type of data obtained. Some analysis techniques that can be used include:

1. Thematic Analysis: To analyze qualitative data from interviews and case studies, thematic analysis is conducted to identify themes and emerging patterns.

2. Statistical Analysis: To analyze survey data or other quantitative data, statistical analysis can be performed, such as descriptive analysis, correlation tests, or regression analysis, to gain a deeper understanding of the relationship between relevant variables.

3. Comparative Analysis: Used to compare best practices from other universities that have successfully developed learning technology, with the context of UCB as a reference.

3. RESEARCH RESULTS

a. Survey Results and Analysis:

Based on the survey data obtained from 120 students at Citra Bangsa University from May to June 2023, it shows that:

K1: The impact of the use of technology in learning on students' learning experiences

Table 1. K1 Survey Results

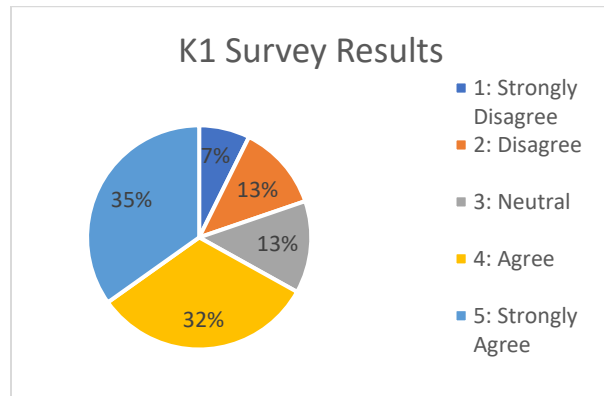| Likert Scale	Percentage
1: Strongly Disagree	7.33%
2: Disagree	12.42%
3: Neutral	13.33%
4: Agree	32.08%
5: Strongly Agree	34.83%

Diagram 1. K1 Survey Results

K2: Interaction between Lecturers and Students through the Use of Technology in Learning

Table 2. K2 Survey Results

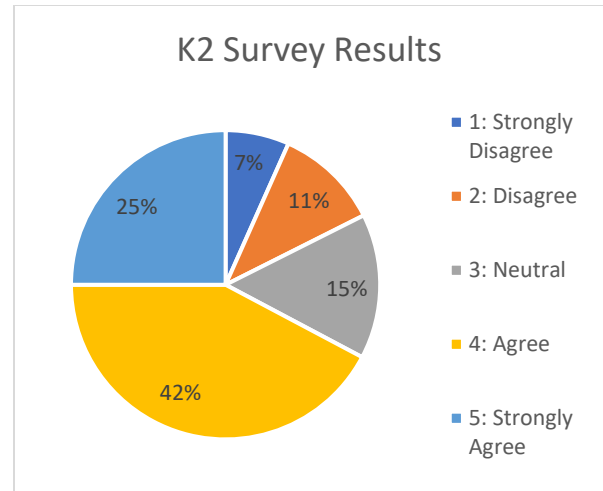| Likert Scale	Percentage
1: Strongly Disagree	6.67%
2: Disagree	10.92%
3: Neutral	15.17%
4: Agree	42.25%
5: Strongly Agree	25.00%

Diagram 2. K2 Survey Results

K3: Motivation and Student Engagement in Online Learning

Table 3. K3 Survey Results

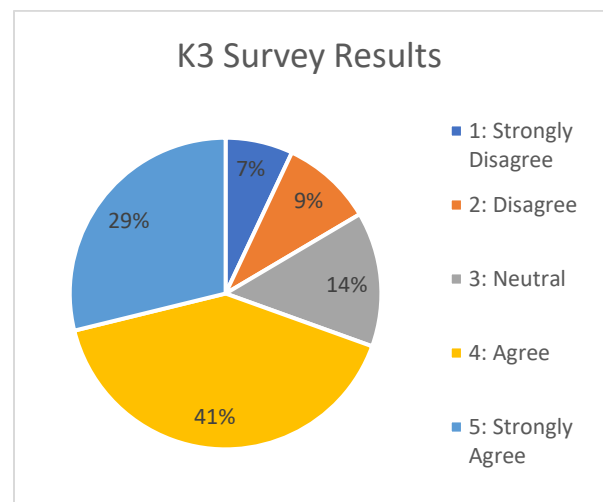| Likert Scale	Percentage
1: Strongly Disagree	7.00%
2: Disagree	9.50%
3: Neutral	14.00%
4: Agree	40.67%
5: Strongly Agree	28.83%

Diagram 3. K3 Survey Results

Based on the survey results and criteria K1, it is observed that 66.92% (32.08% + 34.83%) of the 120 respondents stated that the use of technology in learning has a positive impact on the learning experience of UCB students. Additionally, 13.33% remained neutral, and 19.75% (7.33% + 12.42%) expressed that technology in learning has a negative impact on the learning experience of UCB students.

Analyzing the results for K2, it is evident that 67.25% (42% + 25%) of the respondents feel that technology in learning has improved the interaction between lecturers and students at UCB. On the other hand, 15.17% remained neutral, and 17.58% stated that the use of technology in learning has reduced the interaction between lecturers and students at UCB.

Regarding K3, 70% (40.67% + 28.83%) of the respondents feel more motivated and engaged in online learning. Moreover, 14% remained neutral, and 16.5% felt a lack of motivation and engagement in online learning at UCB.

Based on these survey results, it is evident that at Universitas Citra Bangsa, the use of technology in learning has a positive impact on the students' learning experience, enhances the interaction between lecturers and students, and fosters motivation and active engagement in online learning.

b. Interview Result:

The interviews with lecturers revealed several obstacles faced in the development of technology-enhanced learning at Universitas Citra Bangsa. Some of these obstacles include:

1. Budget limitations: Respondents mentioned that budget constraints are a hindrance in the development of technology-enhanced learning, such as the purchase of necessary hardware and software.

2. Inadequate technology infrastructure: The findings indicate that Universitas Citra Bangsa faces challenges in providing adequate technology infrastructure. This infrastructure includes stable internet connections, adequate hardware in computer labs and libraries, and learning spaces equipped with technological facilities. Insufficient infrastructure can hinder the effective use of technology in learning and cause discomfort for both lecturers and students.

3. Limited availability of quality digital content: The research findings show that there is a scarcity of high-quality digital content available for use in learning. Digital content includes learning materials such as e-books, e-journals, instructional videos, or other interactive materials. The limited availability of quality content can impact the student learning experience and the ability of lecturers to present engaging and relevant learning materials.

4. Limited technology knowledge and skills among some lecturers: The findings indicate that some lecturers have limitations in their knowledge and skills regarding the technology required for effective technology-enhanced learning. It was found that some lecturers lack an-depth understanding of tools and technology applications that can be used in learning, and they may be less proficient in operating and utilizing them to their fullest potential. These limitations can become barriers to the optimal implementation of technology-enhanced learning and providing rich and interactive learning experiences for students.

5. Access imbalances: Some respondents stated that discrepancies in technology

access among students can pose challenges in implementing technology-enhanced learning. Students with limited access to devices and internet connectivity may face difficulties participating in technology-dependent learning activities.

6. Technical difficulties: Respondents reported that technical issues, such as unstable internet connections or incompatible devices, hinder the adoption of technology-enhanced learning. This can disrupt a smooth and effective learning experience.

The results of this study indicate that UCB students have a positive perception of the use of technology in learning. However, there are obstacles related to technology infrastructure and the lack of high-quality digital content. Additionally, lecturers face challenges in utilizing technology and require capacity building. Based on the research findings, the development of technology-enhanced learning at UCB is recommended to focus on improving infrastructure, enhancing lecturer capacity, expanding digital content, and implementing effective evaluation mechanisms.

4. RESEARCH DISCUSSION

Based on the data analysis, the following recommendations are formulated for the development of technology-enhanced learning at Universitas Citra Bangsa, which include the following steps:

1. Technology Infrastructure:

   There is a need to enhance the facilities and accessibility of the technology infrastructure at UCB, including improving internet connectivity, providing adequate hardware and software, and developing comfortable digital learning spaces.

a. Improving Internet Connectivity:

   Stable and fast internet connectivity is a fundamental requirement to support technology-enhanced learning. In order to improve the technology infrastructure, UCB needs to invest in increasing the speed and capacity of internet connectivity across the campus. This may involve increasing bandwidth, adopting the latest networking technologies, and collaborating with reliable internet service providers.

b. Providing Adequate Hardware and Software :

   UCB should ensure the availability of adequate hardware and software for students and lecturers. Sufficient hardware, such as computers, laptops, tablets, and other mobile devices, should be available in computer labs, libraries, and other learning spaces. Additionally, software applications that support online learning, collaboration, and interaction between lecturers and students should be adequately provided.

c. Developing Comfortable Digital Learning Spaces:

   The development of comfortable digital learning spaces may involve constructing dedicated spaces or digital platforms designed to support online learning. UCB can provide virtual learning spaces equipped with features like video conferencing, learning management systems, and online collaboration tools. Comfortable and user-friendly digital learning spaces will enhance the effectiveness of distance learning and

interactions between lecturers and students.

2. Lecturer Capacity Building:

There is a need for training and mentoring programs to enhance the technological knowledge and skills of lecturers so that they can effectively integrate technology into their teaching.

a. Training Programs:

UCB can design and implement training programs aimed at improving the technological knowledge and skills of lecturers. These training programs may cover various aspects, such as the use of online learning platforms, digital collaboration tools, interactive learning media, and digital content development. The training programs can be delivered through in-person workshops, online training, or a combination of both, depending on the needs and resource availability.

b. Mentoring and Guidance:

In addition to training programs, individual or group mentoring and guidance can be provided to lecturers to assist them in integrating technology into their teaching. This mentoring can be conducted by the technology-enhanced learning development team at UCB or by lecturers who possess higher technological expertise. Such mentoring provides opportunities for lecturers to receive direct guidance in planning, implementing, and evaluating the use of technology in their teaching.

c. Collaboration among Lecturers:

UCB can encourage collaboration among lecturers in the development of technology-enhanced learning. Lecturers with higher technological knowledge and skills can share their knowledge, experiences, and best practices with their colleagues. This can be facilitated through discussion sessions, regular meetings, or online collaboration platforms. Collaboration among lecturers will facilitate information exchange and collectively enhance technological knowledge and skills.

3. Expansion of Digital Content:

Efforts are needed to develop and curate high-quality digital content that aligns with UCB's curriculum. This may involve collaborations with external educational institutions or digital content providers.

a. Internal Digital Content Development:

UCB can develop high-quality digital content that aligns with the university's curriculum. This involves collaboration between lecturers and the technology-enhanced learning development team to design and produce relevant, engaging, and interactive digital content. The content may include learning modules, instructional videos, interactive tutorials, and other learning materials that can be accessed online by students.

b. Collaboration with External Educational Institutions:

UCB can collaborate with external educational institutions, whether other higher education institutions, digital content providers, or research

institutions, to develop and curate high-quality digital content. This collaboration may include content exchange, access to existing digital platforms or resources, and joint content creation. With this collaboration, UCB can expand access to high-quality digital content that supports learning.

c. Digital Content Curation:

In addition to content development, UCB also needs to curate existing digital content. Content curation involves selecting, evaluating, and reorganizing relevant and high-quality digital content. This can be done by involving lecturers, technology-enhanced learning developers, and content curation teams. Content curation ensures that the content provided to students meets learning needs, is accurate, and complies with set standards.

d. Evaluation and Content Updates:

UCB needs to conduct periodic evaluations of the provided digital content. This evaluation can involve feedback from students and lecturers regarding content quality, clarity of presentation, relevance to the curriculum, and effectiveness of tools or platforms used. Based on this evaluation, UCB can update and improve the content as necessary to keep it up-to-date and in line with the latest developments.

4. Evaluation and Monitoring:

Effective evaluation and monitoring mechanisms are needed for the implementation of technology-enhanced learning at UCB. This includes collecting feedback from students and lecturers, analyzing technology usage data, and assessing the effectiveness of technology usage in achieving learning objectives.

a. Collecting Feedback from Students and Lecturers:

Collecting feedback from students and lecturers is a crucial component in evaluating the implementation of technology-enhanced learning. Through surveys, interviews, or focus group discussions, students and lecturers can provide their views, experiences, and perceptions regarding the use of technology in learning. This feedback can cover aspects such as the clarity of learning materials, interaction between lecturers and students, the availability and quality of digital content, and the effectiveness of tools or platforms used.

b. Analysis of Technology Usage Data:

Technology usage data, such as activity logs, frequency of usage, or interactions on learning platforms, can be analyzed to gain insights into how technology is being used in learning. By analyzing this data, UCB can identify usage patterns, trends, and student participation levels in technology usage. This will aid in evaluating the effectiveness and application of technology in the learning context at UCB.

c. Assessment of the Effectiveness of Technology Usage:

In addition to feedback and data analysis, UCB also needs to assess the effectiveness of technology usage in achieving learning objectives. This

assessment can involve evaluating student learning progress, academic outcomes, participation rates, and student satisfaction with technology usage. By conducting this assessment, UCB can evaluate to what extent technology usage has contributed to achieving the set learning objectives.

5. CONCLUSION

Based on the research and discussion, the following conclusions can be drawn:

1. Technology Infrastructure: Improving the facilities and accessibility of technology infrastructure at UCB, including internet connectivity, hardware, and digital learning spaces, will facilitate effective technology-enhanced learning.
2. Lecturer Capacity Building: Training, mentoring, and collaboration among lecturers will enhance their technological knowledge and skills, enabling them to integrate technology effectively into their teaching.
3. Expansion of Digital Content: Developing and curating high-quality digital content, both internally and through collaboration with external institutions, will broaden access to quality learning materials at UCB.
4. Evaluation and Monitoring: Effective evaluation and monitoring, including feedback collection, data analysis, and effectiveness assessment, will aid in evaluating and improving the implementation of technology-enhanced learning at UCB.

ACKNOWLEDGEMENTS:

BIBLIOGRAPHY

Al-Fraihat, D., Joy, M., & Sinclair, J. (2020). Factors influencing teachers' intention to use technology: A systematic review of the literature. International Journal of Educational Technology in Higher Education, 17(1), 1-30.

Barabási, A. L., & Albert, R. (1999). Emergence of scaling in random networks. Science, 286(5439), 509-512.

Bragge, J., Bingham, G., & Alvesalo, J. (2023). The role of technology in remote learning during the COVID-19 pandemic. Journal of Educational Technology Research and Development, 71(1), 207-223.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Gonzalez, T. (2023). The impact of COVID-19 on education: A review of the literature. Journal of Education and Learning, 12(2), 45-58.

Guzzo, R. A., Fink, A. A., King, E. B., Tonidandel, S., & Landis, R. S. (2023). Big data recommendations for industrial–organizational psychology.

Industrial and Organizational Psychology, 6(1), 3-22.

Katoh, K., & Standley, D. M. (2013). MAFFT multiple sequence alignment software version 7: improvements in performance and usability. Molecular Biology and Evolution, 30(4), 772-780.

Krishna Moorthy, J., Yee, L. W., Wei, K. K., & Soon, N. K. (2018). Behavioral intention to adopt digital library: An empirical investigation. The Electronic Library, 36(2), 294-312.

Miar Faraj Al-Sayyid, M., & Elsayed, M. (2025). The mediating role of the technology acceptance model in explaining the use of online education systems. International Journal of Information and Learning Technology, 32(1), 21-37.

Nguyen, T., & Le, N. T. (2021). E-learning quality improvement: A systematic review of factors influencing students' satisfaction. Journal of Computer Assisted Learning, 37(1), 102-116.