DISCOVER HOW TECHNOLOGY AFFECTED STUDENTS' ACADEMIC PERFORMANCE

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Abstract

Around the world, technology has assumed a major position. It has arrived to stay, yet it has advantages and disadvantages of its own. Information and communication technology (ICT) has harmed many people more than it has helped, especially among young people. However, it must be demonstrated whether students' and teachers' ability to keep up with technological change will affect both the quality of education and students' satisfaction. The adoption of information and communication technology by universities and its effects on the academic performance of university students are investigated and explored in this study. The study also investigates how gender, GPA, and student majors influence the link between ICT and academic success. Students collected were university students from various university and city in Indonesia. The results showed that the technology adoption itself somewhat affected their academic performance. Some students stated that they don't have sufficient technological support to keep up with the environment. The study's findings provided insight into how educational institutions should design effective technology adoption processes for their policies relating to distance learning.

Keywords: technology adoption, academic performance, university students

1   INTRODUCTION

In recent years, technology has become an integral part of modern society, transforming various aspects of our lives, including education. The integration of technology into educational settings has gained significant attention due to its potential to revolutionize the learning process and enhance student academic performance. This research background explores the evolution and impact of technology in education, focusing on its role in improving students' academic achievements (Dubey & Sahu, 2021; Linh & Ha, 2021).

The rapid development of new technology, especially information technology, has changed the face of the planet and had an impact on every area of human existence. The same is true for the educational sector, where cutting-edge technologies have helped traditional student-teacher interaction and learning processes (Kaur & Gopal, 2021). For many industries around the world, information, and communication technology (technology) has emerged as a significant source of innovation and efficiency improvement. University students now use technology applications both inside and outside of the classroom as an essential element of their learning

process. This is especially true in the education sector. Over the past two decades, the government and other stakeholders in the education sector, including university administration and scholars, have invested millions of dollars to implement technology in the educational system (Basri et al., 2018).

Over the past few decades, there has been a remarkable shift in educational paradigms, moving from traditional teacher-centered approaches to learner-centered methodologies. This transition has been heavily influenced by the proliferation of technology in classrooms. Computers, tablets, interactive whiteboards, online platforms, and educational software have become common tools in educational settings. As technology continues to advance, educators are increasingly incorporating it into their teaching methods to engage students in more interactive and dynamic ways.

Thousands of students benefit from the numerous network site platforms. Universities are now utilizing the power of social media platforms to directly reach out to their students. Universities are not immune to these quickly changing technical innovations and cannot afford to fall behind because these developments can bring vital insights to the academic community. The adolescent students discovered themselves watching streaming videos. These provide kids with the idea and opportunities for social connection with classmates as well as the opportunity to develop their learning capacities. Today's pupils are digital natives; they were born in the digital age and have grown up engaging with digital technology (Amadu et al., 2018).

According to the census, Indonesian students use technology in the classroom more than students in many other nations, often outperforming students in more industrialized countries. Indonesian students use IT suites or computer rooms the most (40%), internationally. They are also the world's second-highest users of desktop computers (54%), trailing only the United States. More than two-thirds of Indonesian students (67%) use smartphones in class, and an even higher proportion (81%) use them to perform their homework. More traditional tools, such as pen and paper, are still utilized by students in the classroom and at home, and whiteboards are still popular in Indonesian classrooms, with 90% of teachers claiming to use them. Indonesian students are also closely tied with Americans in terms of using laptop computers for homework (84% vs. 85% in the US) (Cambridge International, 2018). The fact supported by the data showed on the figure below regarding the internet use among students from 5 to 24 years old from 2016 to 2020.
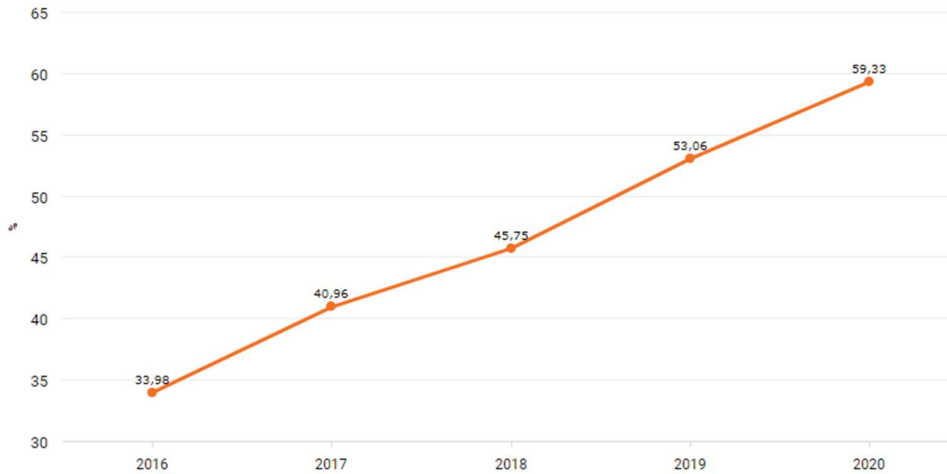
Figure 1. Internet Use Among Students 5-24 years

Source: (Katadata, 2021)

Online education is a versatile instructional delivery system that includes any sort of learning that takes place over the internet. It allows professors to reach students who would otherwise be unable to enroll in a traditional classroom setting, as well as students who require the freedom to work on their own time and at their own pace. Another enticing aspect of online learning is its versatility; students can schedule their time and work based on their abilities to finish tasks. The ambition to "provide quality education to all students, regardless of location or time" drives the demand for online courses. By integrating face-to-face lectures with technology, blended learning and flipped classrooms are formed; this type of learning environment can increase students' learning potential (Kaur & Gopal, 2021). The majority of colleges that have embraced technology have seen significant advancements in the use of technology to enhance teaching, research, and development. However, it is unclear what effect technology applications have on students' performance and achievement especially the case in Indonesia itself. Thus, this research provides the technology acceptance model to measure university students' performance.

2 METHODOLOGY

This study adopts a cross-sectional research design, which involves collecting data at a single point in time. The target population for this research comprises university students from diverse backgrounds and regions across Indonesia. The preliminary sample size for this research

consists of 33 respondents. These respondents will be selected using convenience sampling, as this method is practical and feasible for gathering data from university students.

Data will be collected through a structured questionnaire. The questionnaire will be designed to capture information on various factors of interest, such as demographic information, educational background, and specific constructs related to the research objectives. The questionnaire will be developed based on a thorough review of the literature, prior research, and consultations with subject matter experts. The questions will be designed to measure variables relevant to the research constructs. Questionnaires will be distributed to university students across Indonesia. To ensure a representative sample, efforts will be made to collect data from various regions, institutions, and academic disciplines.

3   FINDINGS AND DISCUSSION

Data gathered from 33 respondents who are university students from various province in Java, with 60.6% of them are 18 – 23 years old. According to the results, only 6.1% of respondents who tends not having proper computer for distance learning at home. Yet, they all have sufficient internet connection on their smartphone. Self-efficacy and perceived usefulness are significant intrinsic concerns in online education. Learners who believe they have a high sense of self-efficacy are more likely to overcome obstacles and will work harder and longer. Perceived Usefulness (PU) is the user's subjective belief that using a certain application system will improve his or her job performance within an organizational setting. Learners are more likely to use technology if they believe it is easy to use and helps their academic progress and performance (Kaur & Gopal, 2021). More than half of the respondents stated that the use of technology allows them to complete assignment faster while seeking innovation and increased innovation productivity. As much as 57.6% of them also think that technology has increased the innovation quality in doing their assignments. Fifty-one-point five percent of the respondents agree that the technology gave benefits in innovation process rather than its drawbacks. This results align with the study conducted by Amadu et al. (2018) which explained students who believe that technology is simple to use to get information related to their academics have a substantial impact on perceived usefulness and perceived simplicity of use. Students stated that technology and social media were easy to use and beneficial to their academic goals.

The degree to which a user anticipates the usage of a system or technology to be free of effort is referred to as perceived ease of use. Many research has empirically validated the predictive energy of perceived ease of use and perceived efficacy for user technology acceptance. The term Perceived Ease of Use relates to a person's personal belief system that technology adoption isn't difficult or time-consuming when used. The settings are influenced by an awareness of practicality and ease of usage (Amadu et al., 2018; Sugandini et al., 2021). The results showed that 57.6% of the respondents agree if their interactions with Technology in the innovation process have been clear and understandable, the 33.3% stated strongly agree and the rest chose neutral. Moreover 51.5% of them also stated that using Technology allows them to have more accurate information, while the same percentage of them agree that learning to operate with technology was easy for them as well. Perceived Ease of Use shows a high positive link with students' faith in e-learning in the study conducted by Sugandini et al. (2021). Students are interested in e-learning because they believe that gaining access to e-learning programs and methodologies is simple. Students with a relatively high level of innovation find it simpler to deal with new technology, especially if they are simple to understand and use.

The findings on Kaur & Gopal (2021) reveal that attitudes toward technology use have a favorable impact on the system's intention to be used in the context of online and distance learning. The more positive a person's attitude toward a behavior, the more likely that person will engage in that behavior. Behavioral intention was chosen as the last dependent variable rather than actual behavior since it was thought to be the immediate antecedent of actual behavior. According to the survey almost 94% respondents agree and strongly agree that utilizing technology for innovation process is a wise and fun idea to do, thus all of them stated that technology is suitable for the innovation process itself. Conversely, there is 3% of the respondents stated that they will not plan to use technology for innovation process regularly in the future.

4   CONCLUSION

In conclusion, the research findings among university students in various provinces in Java underscore the transformative potential of technology in education, particularly in the context of online learning and innovation processes. Several key takeaways can be drawn from this study:

1. **Access and Infrastructure**: The majority of students have access to proper computers and reliable internet connections, which forms a strong foundation for effective online education.

2. **Self-Efficacy and Perceived Usefulness**: Students' beliefs in their ability to succeed in online learning (self-efficacy) and their perception of technology's usefulness are significant drivers of technology adoption for academic purposes. When students view technology as easy to use and beneficial, they are more motivated to engage with it.

3. **Impact on Innovation**: Technology not only accelerates academic tasks but also enhances the quality and clarity of innovation processes. Students recognize that technology facilitates faster completion of assignments and fosters innovation and productivity.

4. **Perceived Ease of Use**: The ease of learning and operating with technology is closely linked to students' faith in e-learning. User-friendly technology is more likely to be embraced by students, further supporting their educational goals.

5. **Attitudes Toward Technology**: Positive attitudes toward technology are strong predictors of students' intentions to continue using it for education and innovation. The overwhelming majority of respondents view technology as a wise and enjoyable tool for the innovation process.

6. **Future Intentions**: While the majority of students express a positive attitude toward technology, a small percentage remains unsure about their future intentions regarding technology adoption. This highlights the need for ongoing research and efforts to address potential barriers to technology integration.

Overall, this research suggests that technology plays a vital role in enhancing student academic performance and fostering innovation in education. To harness the full potential of technology, educators and policymakers should focus on providing equitable access to technology, promoting self-efficacy, and ensuring that students perceive technology as easy to use and beneficial. By addressing these factors, educational institutions can better leverage technology to meet the evolving needs of today's learners, ultimately leading to improved academic outcomes and innovation in education.

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