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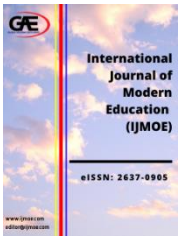

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ENHANCING STUDENT KNOWLEDGE, MOTIVATION AND PERCEIVED EFFECTIVENESS: AN ANALYSIS OF THE IMPACT OF DIGITAL TECHNOLOGY

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Abstract:

This research paper explores the influence of digital technology on learning outcomes within the Faculty of Hotel and Tourism Management, Universiti Teknologi Mara. Focused on assessing the effectiveness of digital technology in enhancing students' learning performance, the study examines into the relationships between digital technology and student motivation, knowledge development, and perceived effectiveness. Employing a survey questionnaire, distributed among 140 students enrolled in the Faculty of Hotel and Tourism Management, the research relies on SPSS analysis to examine the data. The findings revealed a significant relationship between digital technology utilization and student motivation, knowledge development and perceived effectiveness, affirming the positive impact on student learning outcomes. The study highlights the potential of digital tools in fostering motivation, knowledge acquisition, and perceived effectiveness in the academic context. The implications of these results suggest the need for continued exploration in this area. As a recommendation for future research, the paper proposes further studies to delve deeper into the multifaceted dynamics between digital technology and learning outcomes within the realm of hotel and tourism management education.

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Keywords:

Digital Technology, Motivation, Knowledge Development, Perceived Effectiveness

Introduction

Due to the global impact of the COVID-19 pandemic, the landscape of teaching and learning has undergone a profound transformation, shifting towards digital technology. Traditional classrooms have given way to virtual platforms and online tools, as educational institutions around the world adapt to the challenges posed by the pandemic. This shift has not only facilitated the continuation of academic activities but has also reshaped the way educators and students engage with the learning process. Embracing digital technology has not only become a necessity for maintaining educational continuity but has also opened up new opportunities for innovative and flexible learning experiences in the face of unprecedented circumstances.

As digital platforms and tools became increasingly integral to the educational process, the necessity to examine their influence on student learning outcomes became paramount. The hospitality and tourism industry itself are experiencing significant digital transformation, influenced by various technological advancements. The corridors of education policy echoed with the resonance of digital technologies for teaching and learning in recent years. Setting out on a mission to develop critical thinking abilities necessary for the complexities of long-term hospitality operations, Schott (2017) fervently maintained that adopting revolutionary digital learning technologies wasn't just a chance; it was a necessity. Picture this technological leap as a bold explorer, exploring a revolutionary platform with the capacity to transform the very thinking of pupils right from the outset.

This study delves into the effectiveness of hospitality students utilising digital technologies for their learning activities. The stage is set for unravelling the dynamics of this symbiotic relationship between technology and hospitality education. In the dynamic landscape of higher education, the fusion of current educational technology with fundamental principles and practices has innovatively expanded into an integral part of the teaching and learning process. Picture it as a rapid evolution, where Henderson et al. (2017) and Juan and Gairn (2020) stand as torchbearers, guiding the students through the transformative journey that has made educational technology an inseparable aspect of higher learning.

For the purpose of this study, the digital technology referred to is the use within the classroom by instructors or lecturers, such as e-books, online quizzes or games, the use of social media such as YouTube, Instagram, MOOC for certain subjects, and the widespread use of U future within UiTM. Therefore, the objectives of this study are to examine the relationship between digital technology and student motivation, to prove if there is a positive relationship between digital technology and student knowledge, motivation and perceived effectiveness.

The findings of this study will encourage students' perceptions of digital technology as being useful in improving their overall learning experience. However, this study recognised that although digital tools provide easy access to information, students are often engaged in surface-level learning when using them in isolation. The study highlighted the important role of guided

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use and well-designed instruction in maximising the benefits of digital technology for education, offering practical insights tailored to the unique needs of students in the field of hotel and tourism management.

Literature Review

Relationship Between Digital Technology and Student Motivation.

The theory of self-determination is referred to by a number of studies examining the link between student motivation and digital technology (Rosli & Saleh, 2022), which show that a broad range of disciplines, including psychology, education, business, and computer science, are involved in the link between motivation and digital technology. More research is under way on this issue, indicating that digital technology can have both positive and negative impacts on motivation. Other than that, digital technology, depending on its design, implementation, and use, can be a source of intrinsic drive, according to Iordache, Marien, and Baelden (2017).

Several studies have shown that digital technology can be used to inspire students. Digital animation, as an example of a multimedia application like video, can boost student engagement and motivation (Clark & Mayer, 2011; Mayer, 2019). According to other research, virtual and augmented reality technology can boost student enthusiasm and engagement (Merchant et al., 2014; Radu, 2014). Other research has revealed that this setting can also lead to difficulties such as feelings of isolation and technology-related anxiety (Cleveland-Innes & Campbell, 2012). However, there is a link between student achievement motivation and technology use, which relates to their drive to succeed.

Lastly, the evidence suggests that using digital technology for developing stimulating, interactive, and flexible learning environments may increase student motivation. Fortunately, the relationship between student motivation and digital technology is complicated because it is influenced by a variety of factors, including variation in motivation, the specific technology utilised, the learning setting, and the learning task. However, digital technology assists students in obtaining information promptly, staying up-to-date, and working on university tasks given more quickly in an innovative manner. In conclusion, students can motivate themselves by using digital technology that has a positive impact on them.

Therefore, based on the above statement, the following hypothesis is formulated*:*
H1: There is a positive relationship between digital technology and student motivation.

Relationship Between Digital Technology and Knowledge

Several studies have been conducted to investigate the ways in which the progression of knowledge is related to the rise of digital technology. The use of digital technology has been seen as a crucial accelerator for the expansion of existing knowledge since it opens up new doors to educational opportunities as well as to communication, cooperation, and the archiving of information.

Kelly (2023) examines the transformative impact of digital technology on the field of education, with a particular focus on higher education. The advent of online learning platforms, interactive simulations, and multimedia has significantly enhanced the accessibility of education, catering to a wide range of learning preferences and accommodating individuals with varying schedules. The intersection of digital technology and collaborative learning has

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become a topic of increasing interest and importance in educational research and practice. The utilisation of digital technology enables the facilitation of collaborative learning, a crucial component in the process of knowledge development. Technological advancements, such as the utilisation of online forums, social media platforms, and groupware, facilitate the process of collaborative problem-solving, foster discussions, and promote peer learning. According to Roh, Lee, and Charlotte (2023), digital repositories have emerged as indispensable infrastructure for scholarly pursuits. Digital platforms facilitate the storage, retrieval, and dissemination of scholarly knowledge, thereby enhancing the accessibility and participation of individuals in the academic knowledge domain. According to Deursen and Dijk (2010), the acquisition of digital literacy is of utmost importance in contemporary society as it enables individuals to proficiently navigate, assess, and utilize the vast amount of information accessible through digital platforms.

In conclusion, the relationship between knowledge and digital technology is symbiotic. Digital technology supports the development of knowledge by enhancing learning experiences, fostering collaboration, storing academic content, and providing resources for self-learning. Conversely, the growth of knowledge also guides the evolution of technology to better serve the needs of the students in the faculty and educators. However, this relationship relies on individuals having sufficient digital literacy to leverage technology effectively.

Therefore, the next hypothesis is formulated:
H2: There is a positive relationship between digital technology and student knowledge.

Relationship Between Digital Technology and Perceived Learning Effectiveness.
User friendliness, course structure clarity, and instructor involvement were critical factors impacting perceived learning effectiveness (PLE). Lee and Lee (2018) investigated how educational technology might improve PLE, finding that user-friendly multimedia, interactive simulations, and social media, when curriculum-relevant, can significantly increase PLE. Self-regulated learning, or the ability of students to manage their own learning process, has been linked to improved PLE.

Singh and Thurman's (2019) systematic study highlighted that self-regulated learning skills are an essential component of high PLE, especially in online learning contexts. The authors emphasised the importance of developing these skills to enhance PLE. The level of guidance provided by instructors also significantly affects PLE. Kirschner, Sweller, and Clark (2006) noted that methods providing minimal instruction, such as problem-based and discovery learning, might be ineffective. They found that sufficient supervision and support from instructors could significantly enhance PLE.

The students in the Faculty of Hotel and Tourism Management might perceived learning effectiveness is a complex concept influenced by various factors, including instructional design, technology use, self-regulated learning, and instructional support. At the same time, it is crucial for educators to consider these factors and their interplay to improve learning outcomes in diverse educational settings.
Therefore, the following hypothesis is formulated:
H3: There is a positive relationship between digital technology and perceived learning effectiveness.

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Theoretical Framework

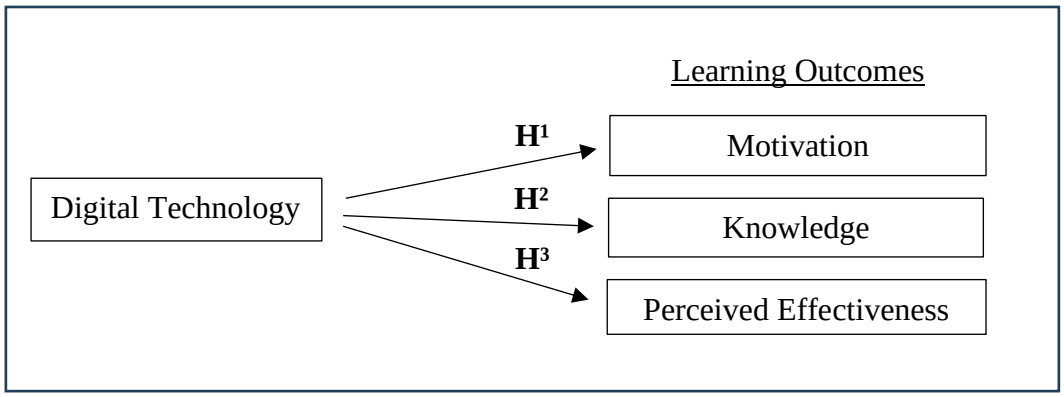

Figure 1: Theoretical Framework of the Study

Methodology

This study employs a quantitative research approach to rigorously test the hypotheses developed. To gather relevant data, a survey questionnaire was utilized, and it was distributed among students within the Faculty of Hotel and Tourism Management. This method allows for a systematic and numerical analysis, offering insights into the relationships and patterns associated with the impact of digital technology on student learning outcomes. By employing a survey questionnaire, the study aims to derive valuable quantitative data that can contribute to a comprehensive understanding of the subject matter.

Population And Sample Size

The study focused on a targeted total population of 1300 students in the faculty, encompassing both undergraduate and postgraduate students from the first to sixth semester within the Faculty of Hotel and Tourism Management, UiTM Puncak Alam. The sampling technique employed was a non-probability convenience method, where respondents were selected based on their availability and willingness to participate. In essence, the sample consisted of individuals who were easily accessible to researchers and expressed a willingness to be part of the study. The sample size determination followed Hair et al.'s (2010) approach, utilizing one item multiplied by five respondents. Given that the study involved 28 items, a minimum of 140 students was deemed necessary to ensure the completeness and robustness of the research findings.

Research Instrument

In terms of instruments, the study's inquiries were organized into three primary sections. These questions were derived from previous research conducted by other scholars and were subsequently reviewed and redefined to align with the current context. Rigorous adjustments were made to ensure that the questions were tailored to the specific settings of this study. The refined set of questionnaires was then distributed to the students within the faculty, facilitating a comprehensive exploration of the targeted aspects related to the impact of digital technology on student learning outcomes. This meticulous adaptation of instruments enhances the relevance and applicability of the study's findings.

The study questionnaire was structured into three distinct sections to comprehensively investigate the relationship between digital technology and student learning outcomes. Section A focused on digital technology, aiming to identify the tools students use in their digital

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practices. A series of questions were crafted to gauge the effectiveness of digital usage and its impact on learning outcomes.

In Section B, the study investigated into students' learning outcomes, encompassing motivation, perceived learning effectiveness, and knowledge development. Respondents provided their perspectives on a Five-point Likert scale, ranging from 'Strongly disagree' to 'Strongly agree'. The instruments were thoughtfully presented in both English and Malay to accommodate diverse linguistic preferences.

The final segment, Section C, gathered respondents' demographic information, including gender, age, marital status, current semester, and the duration of their enrollment in the hospitality field. Nominal and ordinal scales were employed in this section to provide essential insights into the factors influencing student learning outcomes at UiTM Puncak Alam. For digital technology, the items were taken and adapted from Giovanella (2020), Martins et al (2014), Venkatesh et al. (2012), Alario-Hoyos et al. (2013). For motivation questions, the items were adapted from Mc Auley et al. (1989) while the items for knowledge development were adapted from Isaac et al. (2019). Finally, for perceived effectiveness, the items were adapted from Martens et al. (2007) and Marks et al (2005).

Data Collection

The data collection process for this study involved the distribution of a questionnaire via Google Form through various communication channels, including Email, WhatsApp, Telegram, and Instagram. Students were requested to complete the entire questionnaire, spanning from Section A to C. The data collection period extended over 2 months, commencing in early October 2023 and concluding at the end of December 2023.

Convenience sampling was employed, where respondents were chosen from readily available sources, willingly participating after being approached by the researchers. However, challenges emerged during the data collection phase, as some students exhibited reluctance to fully cooperate and participate with the study. Achieving the minimum number of respondents required for survey completion took an extended period, prompting the researchers to proceed with the available responses to meet the project's deadline for data analysis. Despite these challenges, the study aims to derive meaningful insights from the collected data to contribute to the understanding of the impact of digital technology on student learning outcomes.

Data Analysis

The important stage of data analysis involved transforming raw data into meaningful information, a process essential for extracting insights (Kumar, Talib, & Ramayah, 2013). In this study, IBM SPSS version 28.0 served as the analytical tool for all collected data. Descriptive analysis was conducted to translate the data distribution, establishing means, standard deviations, frequencies, and percentages. To ensure the reliability and validity of each item, Cronbach's Alpha was employed as a measure of internal consistency. This statistical metric assessed the extent to which items within the questionnaire reliably measured the same underlying construct. Additionally, Pearson's correlation coefficient was utilized to explore the relationships between two continuous variables, providing a robust method for evaluating positive correlations. This comprehensive approach to data analysis aimed to unravel patterns, trends, and relationships within the dataset, contributing to a nuanced understanding of the impact of digital technology on student learning outcomes.

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Response Rate

This study conducted the pilot study and 45 students had answered the survey questionnaire which consists of consisted of Semester 1 to Semester 6 students from Faculty Hotel and Tourism Management, UiTM Puncak Alam. Table 1 displayed the results of pilot study.

Table 1: Summary of Alpha Coefficient For Minimum (N=45) Respondents

Variables	No item scale	Cronbach's Alpha (α)
Digital Technology	9	0.792
Motivation	6	0.874
Knowledge Development	4	0.842
Perceived Learning Effectiveness	4	0.822

Based on the Table 1, the reliability coefficient for the pilot test with 45 respondents were tested. Table 1 above shows the range of internal consistency digital technology which is 0.792 which is acceptable, while motivation is 0.874 good, knowledge development also shows results of 0.842 good and the last variable perceived learning effectiveness was 0.822 good. reliability is mostly higher than 0.7, hence the instruments used are proven to be reliable to be used in this study

Table 2: Summary of Alpha Coefficient for (N=151) Respondents

Variables	**No item scale**	**Cronbach's Alpha (α)**	**Internal consistency**
Digital Technology	9	.956	Excellent
Motivation	6	.917	Excellent
Knowledge Development	4	.912	Excellent
Perceived Learning Effectiveness	4	.920	Excellent

Subsequently, in the main phase of the study, Cronbach's Alpha was employed to assess the reliability of each variable, and the results were documented in Table 2. The reliability rates for each item were examined, revealing noteworthy outcomes. Notably, the variable related to digital technology exhibited the highest reliability with a score of 0.956, indicating an excellent level of consistency.

Similarly, the motivation questions attained a reliability score of 0.917, reflecting an excellent level of internal consistency. Furthermore, the knowledge development section demonstrated a Cronbach alpha of 0.912, considered excellent, while the perceived learning effectiveness segment showed a reliability score of 0.920, also falling within the excellent range.

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The Cronbach alpha results surpassed those of the pilot test, consistently exceeding 0.9, reinforcing the instruments' reliability for use in the study. In conclusion, the robust internal consistency demonstrated by these reliability scores underscores the credibility and dependability of the instruments implemented, affirming their suitability for the research at hand.

Table 3: Respondents Demographic Information

Information	Categories	Frequencies	Percentages (%)
Gender	Female Male	90 61	59.6 40.4
Age Group (years)	18 - 21 22 - 25 26 - 29 < 30	40 87 15 9	26.5 57.6 9.9 6.0
Marital Status	Single Married	142 9	94.0 6.0
How long have you been studying in the program?	Less than 1 year 1-2 years 3-4 years	50 39 62	33.1 25.8 41.1
Your current semester?	Semester 1 Semester 2 Semester 3 Semester 4 Semester 5 Semester 6	11 36 22 15 49 18	7.3 23.8 14.6 9.9 32.5 11.9

Table 3 shows the respondents' demographic information which include gender, age, marital status, how long the students have been in the program and their current semester. The table summarises results, frequencies and percentages for each item.

Descriptive Analysis

The following tables show the items used in the questionnaires and the results of descriptive analysis of mean and standard deviation for each variable.

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Table 4: Descriptive Analysis for Digital Technology

Digital Technology	Means (*M*)	Standard Deviation (*SD*)
I am satisfied with the learning technology used in the class.	3.79	1.030
Quiz games can help my performance during study.	3.96	1.076
Digital learning tools technology require me to have more involvement in the class.	3.81	1.029
An e-book can help me find more information	3.91	1.089
Video material like YouTube is very helpful for me in learning.	3.98	1.068
MOOCs help me revise lessons.	3.64	1.104
Using Google Classroom really helps me submit assignments.	3.99	1.152
Digital technology can also help me complete my tasks faster.	3.99	1.137
Ufuture helps me a lot in learning.	3.64	1.157

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Table 5: Descriptive Analysis for Motivation

Motivation	Means (*M*)	Standard Deviation (*SD*)
I enjoy using digital technology while studying.	3.93	1.075
I am pretty good at using digital platforms for learning.	3.76	1.011
I put a lot of effort into this digital technology-based learning environment.	3.90	.862
I am satisfied with my performance in this digital technology-based learning environment.	3.79	.912
I felt pretty competent when using digital technology.	3.81	.890
I am stimulated to learn more about the learning topic.	3.87	.904

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Table 6: Descriptive Analysis for Knowledge Developed

Knowledge Development	**Means (*M*)**	**Standard Deviation (*SD*)**
I gain new knowledge from digital technology.	4.04	.871
I acquired new skills from digital use of technology.	3.97	.952
I can come up with innovative ideas.	3.81	.919
I can learn more easily by using digital technology.	3.85	.999

Table 7: Descriptive Analysis for Perceived Learning Effectiveness

Perceived Learning Effectiveness	**Means (*M*)**	**Standard Deviation (*SD*)**
I am interested in learning lesson topics when using digital technology.	3.89	.990
I gained a good understanding of the basic concepts of the materials.	3.91	.933
I am able to summarise what I learned.	3.74	.985
What I learned I can apply in a real-life context.	3.70	1.005

Pearson's Correlation

In this section, the correlational research design investigated relationships between variables. A correlation reflected the strength and direction of the relationship between more variables. The direction of a correlation could be either positive or negative (Bhandari, 2022). Strength of correlation as follows r=1 was perfect relationship, $r \geq 0.7$ with strong relationship, meanwhile $0.5 < r < 0.7$ as moderate relationship, Next $r \leq 0.5$ was weak relationship, the last strength was r= 0 means no relationship.

Table 8: Correlations Analysis of Digital Technology and Motivation

Correlations			
		Digital Technology	**Motivation**
Digital Technology	Pearson Correlation	1	.799**
	Sig.(1-tailed)		<.001

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	N	151	151
Motivation	Pearson Correlation	.799**	1
	Sig.(1-tailed)	<.001	
	N	151	151
**. Correlation is significant at the 0.01 level (1-tailed)			

Based on the above table, the results showed value to be r=.799 which is a strong relationship and the p-value was < .001 less than 0.01 which indicated a significant relationship between digital technology and motivation.

Table 9: Correlations Analysis of Digital Technology and Knowledge Development

Correlations			
		Digital Technology	**Knowledge Development**
Digital Technology	Pearson Correlation	1	.799**
	Sig.(1-tailed)		<.001
	N	151	151
Knowledge Development	Pearson Correlation	.799**	1
	Sig.(1-tailed)	<.001	
	N	151	151
**. Correlation is significant at the 0.01 level (1-tailed)			

Based on the above table 9, the results showed value to be r=.799 which is a strong relationship and the p-value was < .001 less than 0.01 which indicated a significant relationship between digital technology and knowledge development.

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Table 10: Correlations Analysis of Digital Technology and Perceived Effectiveness

Correlations			
		Digital Technology	**Perceived Effectiveness**
Digital Technology	Pearson Correlation	1	.836**
	Sig.(1-tailed)		<.001
	N	151	151
Perceived Effectiveness	Pearson Correlation	.836**	1
	Sig.(1-tailed)	<.001	
	N	151	151
**. Correlation is significant at the 0.01 level (1-tailed)			

Examining the table above, the results revealed a strong relationship with a correlation coefficient of r=.836, and a highly significant p-value of < .001, indicating a relationship between digital technology and perceived learning effectiveness.

Consequently, it can be concluded that the variables, including motivation, knowledge development, and perceived learning effectiveness, significantly influence student learning outcomes when utilizing digital technology. The robust support for the hypotheses (H1, H2, H3) underscores the positive correlation between digital technology and the mentioned variables. These findings suggest that as students actively engage with digital tools, their motivation intensifies, knowledge acquisition advances, and they perceive the learning process as more effective.

While the results offer valuable insights, it is essential to acknowledge certain limitations, such as the study's context and the cross-sectional nature of the data. To further enrich the understanding of the dynamics between digital technology and student learning outcomes, future research could explore additional factors and potential moderating variables.

In conclusion, the outcomes of hypothesis testing emphasize the crucial role of integrating digital technology into educational practices, showcasing its positive impact on various facets of the learning experience. This underscores the imperative for educators to strategically incorporate technology to enhance motivation, foster knowledge development, and optimize perceived learning effectiveness among students.

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Discussion & Conclusion

This study has successfully fulfilled its objectives of knowing the influence of digital technology on students' learning outcomes, specifically in the Faculty of Hotel and Tourism Management, UiTM Puncak Alam campus. The findings reveal a robust connection between the use of digital technology, serving as the dependent variable, and three independent variables associated with learning outcomes—namely, motivation, knowledge development, and perceived learning effectiveness. The strong relationships highlight the significant impact of digital technology on student learning outcomes in the hospitality program. These outcomes imply that the incorporation of digital tools significantly influences and positively correlates with motivation, the acquisition of knowledge, and the perceived effectiveness of the learning process in the field of hospitality. As such, these results underscore the pivotal role of digital technology in shaping and enhancing students' educational experiences within the context of the hospitality industry.

In the realm of educational research, the impact of digital technology on student learning outcomes has been a topic of extensive study and debate. The results of the study are in line with Sun and Chen (2016) who found that that digital tools can significantly enhance student engagement and interaction. This enhancement is linked to improved understanding and retention of material. However, the effectiveness of these technologies is not automatic; it depends greatly on their design and implementation. The instructors or lecturers in the faculty need to have personalized learning experiences facilitated by digital platforms, as highlighted in a report by the Bill & Melinda Gates Foundation (2014), offer promising avenues for education, allowing students to learn at their own pace with resources tailored to their individual needs.

Nonetheless, the digital divide, as discussed by Kirschner and De Bruyckere (2017), presents a significant challenge, indicating that unequal access to technology can widen educational disparities. The COVID-19 pandemic, as explored by Bao (2020) has accelerated the adoption of digital tools in education, demonstrating their potential to maintain and, at times, improve learning outcomes under challenging circumstances. This body of research collectively underscores the potential of digital technology to enhance educational experiences while also highlighting the need for careful and equitable implementation.

However, the effective use of technology hinges not just on its availability but also on the students mindful and responsible engagement with it. In this era of abundant technological resources, these tools must be utilized thoughtfully and strategically. This approach is essential to nurturing a generation of informed scientists and knowledgeable individuals. Technology, when leveraged wisely, can be a powerful catalyst for learning and innovation, but its true value is realized only when combined with a careful and discerning application.

In conclusion, the exposure that these digital technologies give to student learning outcomes is no longer denied. The acquisition of the collected data has already explained the benefits of its use. Effective use of digital technology involves a balanced and mindful approach. By setting clear objectives, practicing digital literacy, maintaining a healthy digital balance, and staying informed about new technologies, individuals can harness the full potential of digital tools. This approach not only enhances productivity and learning but also ensures responsible and

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sustainable engagement with digital environments. Remember, the key is to use technology as an empowering tool while retaining control over its influence in our lives.

Limitations And Recommendation For The Future Research

This research encountered several limitations during the study. Firstly, the study was confined to students from the Faculty of Hotel and Tourism Management, UiTM, Puncak Alam campus. It did not consider the views of students from other universities in Malaysia. Consequently, the findings represent only the perceptions of hospitality students at UiTM Puncak Alam and might differ if the survey included all hospitality colleges in Malaysia. The focus on a specific group of hospitality students also limited the sample size.

Additionally, the study's short duration only two months for gathering responses is a limitation. This brief period may not adequately capture the dynamic relationship between digital technology and learning outcomes. Future studies might benefit from a longitudinal approach for a more comprehensive understanding of digital technology's impact on students at the Faculty of Hotel and Tourism Management, UiTM, Puncak Alam Campus.

Despite these limitations, they did not significantly deter the overall study process. These constraints can lay the groundwork for future research, enhancing understanding of students' perceptions in the hospitality industry.

For future research, it is suggested that researchers expand their study to include students from a broader range of locations, increasing the validity and accuracy of the data. A wider sample across Malaysia would help in producing more comprehensive and reliable results. Moreover, participant selection should be more diverse without specific restrictions.

Another recommendation is for future studies to focus on different aspects beyond those covered in this study, such as career development, pay and benefits, peer influence, and the influence of academic advisors. Exploring a wider range of elements related to the hospitality industry could provide a richer understanding, as this study only touched upon a few specific aspects.

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