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PERCEIVED USEFULNESS AND EASE OF USE OF DIGITAL LEARNING ENVIRONMENTS FOR LEARNING AMONG UNDERGRADUATES IN OGUN STATE (NIGERIA)

This study examined the perceived usefulness and ease of use of digital learning environments for learning among undergraduates in Ogun state. Descriptive survey research design was adopted for the study. Simple random sampling technique was used to select 240 undergraduates in Tai Solarin University of Education, Ijagun, Ogun state. The instrument for data collection was a self-constructed

questionnaire. The data gathered was subjected to descriptive statistics (frequency counts, percentage, and mean) and inferential (t-test and ANOVA) inferential statistical instruments were employed to analyse the data generated at 0.05 level of significance. Results showed that there was a significant relationship between undergraduates' perception and use of digital learning environments for learning. There is significant difference in the level of usefulness of digital learning environments. There is significant difference in the level of ease of use of digital learning environments for learning. The level of use of digital learning environments for learning is not gender sensitive, both male and female students make use of the digital learning environments for learning There was no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level. In conclusion, the use of digital learning environments promotes learning among students. Therefore, universities should ensure all campuses and student dormitories have access to stable and high-speed internet connectivity; make sure that all students have access to the necessary devices, such as laptops or tablets, to access digital learning environments, provide software licenses and necessary learning materials at no cost or at a subsidized rate to students.

Keywords: *digital learning environments, ease of use, gender, learning level, undergraduates, perceived usefulness.*

INTRODUCTION

Digitization is the process of converting educational resources from tangible forms to electronic formats, enabling storage and manipulation by computers. The shift from analog to digital is considered a pivotal catalyst for innovation in teaching and learning (Joseph, Onwuzulike & Shitu, 2024). Digital tools such as online learning platforms, educational applications, and multimedia resources have created new avenues for both students and educators to access and share knowledge. The transformation brought about by digitization can extend across the entire higher education landscape, streamlining teaching, research, and community service provision, making them more efficient and expeditious. It holds the promise of expanding the reach of teaching and learning, enhancing flexibility, and elevating the quality of higher education in Nigeria (Ogunode & Ndayebom, 2023). According to Akinyemi, Amaechi, and Etoh (2022), digitalization in education involves incorporating modern technology and digital tools innovatively to facilitate the progress of teaching and learning, creating opportunities for remote learning. T. Olatunde-Aiyedun, C. Eyiolorunse-Aiyedun and N. Ogunode (2021) as the process of transitioning traditional teaching and learning materials, such as online learning platforms, educational apps, multimedia resources, online courses, online assessments, and web seminars/conferences or workshops, into an electronic format for effective deployment within educational institutions.

The implementation of digital technologies in educational institutions paves the way for the expansion and utilization of the internet in digitalized setups. Digital materials can be easily and rapidly transmitted, sorted, and retrieved, offering cost-efficiency compared to traditional print methods, especially when utilizing compatible electronic devices for file storage (Ogunode, Abubakar, Abashi, Ireogbu & Longdet, 2021). Moreover, digitization elevates the quality of education through multimedia resources, offering a plethora of educational materials such as videos, podcasts, and interactive simulations. These resources enhance comprehension, making learning more captivating and interactive (Ogunode, Audu & Ahaotu, 2020). An integral aspect of online education is online testing, offering several benefits including impartiality and fairness. Automated grading helps eliminate biases, and it's particularly advantageous for individuals facing test anxiety or those with challenging schedules. However, it's important to note that online testing is most effective for multiple-choice tests and may require human evaluation for essay or short answer questions (Ogunode, Eyiolorunse-Aiyedun & Olatunde-Aiyedun, 2021).

Technology revolutionizes education by enhancing a school's capacity to cater to a wide spectrum of student requirements. Now, students facing challenges like hearing, speaking, or vision impairments, or those with limited mobility, can access a high-quality education. Technological advancements extend their benefits to students with intellectual, social, or developmental disabilities. Irrespective of a student's distinctive needs, technology positively impacts education by enabling the creation of inclusive learning environments (Ogunode, Garba & Solomon, 2021).

Digital learning environment is defined as a learning system that integrates teaching and learning processes with virtual internet connectivity. As development occurs, digital learning environment in higher education rapidly increases and it is supported by the development of digital technology (Haleem et al., 2022).

Digital learning environment is defined as a learning system that integrates teaching and learning processes with virtual internet connectivity. As development occurs, digital learning environment in higher education rapidly increases and it is supported by the development of digital technology (Forsström et al., 2025). Learning environment in the 21st century education needs more student involvement and collaboration. Therefore, the process should be based on Students' Centered Learning (SCL). SCL advises teachers to act as facilitators of learning rather than organizers of learning. Meanwhile, students who are actively involved as actors are empowered to decide; what, when, where, and how to study (Hadiyanto, 2024). Online group learning and students' workgroup is the way to improve student involvement and interaction, which is essential in formal online education. Effective student interactions are positively related to achievement outcomes (Bernard, 2019). Therefore, there is a positive and significant relationship between interaction and student satisfaction, which is strongly predicted by learning content interaction (Alqurashi, 2019).

Digital learning environments have rapidly transformed higher education, offering new opportunities and challenges for both educators and students. Digital learning environments have become an integral part of higher education, transforming the way undergraduates' access, interact with, and engage in the learning process. The integration of technology in education has led to a shift from traditional classrooms to online platforms, and undergraduates' perceptions of these digital learning environments play a significant role in their effectiveness. A well-designed course is a cornerstone of effective digital learning. Instructors must structure their courses in a clear and organized manner. To enhance the usefulness of digital learning environments, course content and activities must be engaging. Instructors should incorporate a variety of multimedia resources, such as videos, interactive simulations, and podcasts. Engaging activities like group discussions, case studies, and problem-solving exercises can promote active learning (Hassan, Aziz & Lee, 2021).

The inclusion of real-world examples and applications can also make the content more relevant and interesting to students. Providing timely and constructive feedback is vital for digital learning. Instructors should establish a feedback loop with students, offering assessments, quizzes, and assignments that provide opportunities for continuous improvement. Additionally, instructors should promptly respond to student inquiries and concerns. Frequent feedback reassures students of their progress and helps them stay on track. Digital learning environments can sometimes lead to feelings of isolation. To mitigate this, instructors can encourage social interaction and collaboration. Discussion boards, group projects, and peer assessments can foster a sense of community and shared learning. Creating virtual office hours or discussion forums for students to connect with their peers and instructors can also enhance the social aspect of learning (Nagesh & Siva, 2025). Learning management systems, such as Blackboard or Moodle, are essential tools for digital learning. Instructors should be proficient in using these systems to organize content, deliver assessments, and facilitate communication. Training and support in utilizing LMS platforms can empower instructors to make the most of these resources (Jibril, Sabitu, Jamilu & Liman, 2018).

Digital learning environments have transformed the landscape of higher education. Today's undergraduates have become increasingly reliant on digital platforms for accessing course materials, participating in discussions, and submitting assignments. In this article, we explore how undergraduates perceive the usefulness of these digital learning environments and the impact on their educational journey. Digital learning environments should encourage feedback from undergraduates. Institutions can regularly solicit feedback to identify areas for improvement. Incorporating student suggestions and implementing enhancements can create a more user-friendly platform. One of the fundamental aspects of digital learning environments is the accessibility of learning materials (Tamrakar & Garg, 2021). Undergraduates value the convenience of accessing course materials online, often from anywhere and at any time. E-books, lecture notes, recorded

video lectures, and other digital resources provide students with flexibility in their learning. This accessibility can be especially valuable when dealing with challenging schedules, part-time jobs, or family responsibilities (Hassan, Aziz & Lee, 2021).

A key factor contributing to the usefulness of digital learning environments is their ability to facilitate interactive engagement (Hassan, Aziz & Lee, 2021). Discussion boards, forums, and chat features enable students to engage with their peers and instructors. These platforms encourage discussions, debates, and the exchange of ideas beyond the confines of the physical classroom. As a result, undergraduates develop a deeper understanding of course material and expand their critical thinking skills. Digital learning environments provide opportunities for quick feedback and assessment. Online quizzes, self-assessments, and automated grading systems enable students to gauge their progress. Instant feedback helps learners identify areas where they need improvement and make necessary adjustments in real time (Yusuf & Endouware, 2021). Additionally, the convenience of online submission and grading streamlines the evaluation process, ensuring that students receive feedback promptly. The integration of multimedia elements enhances the usefulness of digital learning environments. Video lectures, interactive simulations, and multimedia presentations make complex concepts more accessible and engaging. Visual and auditory learners benefit from a more diverse range of teaching methods, which helps cater to individual learning styles (Yo, 2021).

The digital learning environment facilitates the conversion of nearly all hand-copied textbooks, journals, and literary works into digital copies stored on the World Wide Web for easy accessibility. A simple click grants access not only to locally authored books but also to international publications, bridging the accessibility gap to global literature (Olatunde, Ogunode & Eyiolorunse, 2021). The world is rapidly transforming into a global village due to increased interconnectivity among nations, a transformation made possible through digitization. The educational system in Nigeria is gradually embracing technological advancements (McNulty, 2021). In light of the above background, **this study tends** to examine the perceived usefulness and ease of use of digital learning environments for learning among undergraduates in Ogun state.

Research Hypotheses

The following hypotheses were tested in order to guide the study:

$H0_1$: There is no significant relationship between undergraduates' perception and use of digital learning environments for learning in Ogun state

$H0_2$: There is no significant difference in the level of usefulness of digital learning environments for learning in Ogun state

$H0_3$: There is no significant difference in the level of ease of use of digital learning environments for learning in Ogun state

$H0_4$: There is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on gender

$H0_5$: There is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level

RESEARCH METHODS

Research Design. Descriptive survey research design of the survey type was adopted for this study because it is a non-experimental nature.

Population of the Study. The population for this study comprised undergraduate students at Tai Solarin University of Education, Ijagun, Ogun state.

Sampling Technique and Sample. The sample for this study was randomly selected from the total population of this study using simple random sampling technique. The total of two hundred and forty (240) students was sampled each from the population which cut across six (6) colleges in each of the institutions. Hence, forty (40) students were randomly selected from each college making a total of two hundred and forty (240) respondents.

Research Instrument. The research instrument used in gathering data for this study was a well-structured questionnaire.

Reliability of Research Instrument. In other to ensure the reliability of the instrument, the Cronbach alpha statistical instrument was used to establish reliability of the research instrument. The result obtained after administration was subjected to correlation analysis using Cronbach alpha in order to determine the reliability coefficient (0.78) of the instrument, which indicate if the instrument was reliable.

Method of Data Analysis. The data gathered was subjected to descriptive statistics (frequency counts, percentage, and mean) and inferential (t-test and ANOVA) inferential statistical instruments were employed to analyse the data generated at 0.05 level of significance.

RESULTS AND DISCUSSION

Testing of Research Hypotheses.

$H0_1$: There is no significant relationship between undergraduates' perception and use of digital learning environments for learning in Ogun state.

Table 1

Correlation Analysis for hypothesis one

		Undergraduates' Perception	**Use of digital learning environments**
Undergraduates' Perception	Pearson Correlation	**1**	.651
	Sig. (2-tailed)		**.001**
	N	**240**	**240**
Use of digital learning environments	Pearson Correlation	.651	**1**
	Sig. (2-tailed)	**.001**	
	N	**240**	**240**

Developed by authors

Table 1 presents the relationship between undergraduates' perception and use of digital learning environments for learning in Ogun state. The table shows that a strong and positive relationship exists between undergraduates' perception and use of digital learning environments for learning ($r = .651$). The relationship between the two variables is however revealed to be significant ($p < .05$). Hence, there is a significant relationship between undergraduates' perception and use of digital learning environments for learning in Ogun state.

$H0_2$: There is no significant difference in the level of usefulness of digital learning environments for learning in Ogun state.

Table 2

Regression Analysis for hypothesis two

Model		**R**		**R-square**	**Adjusted R square**	**Std. Error**
Level of usefulness of digital learning environments for learning		.313		0.098	0.713	0.153
Model	**Sum of square**	**Df**		**Mean Square**	**F**	**Sig**
Regression	10.939	1		10.930	21.539	.001
Residual	100.561	238		.508		
Total	111.500	239				

Developed by authors

Result in Table 2 reveals that there is significant difference in the level of usefulness of digital learning environments for learning in Ogun state, this is shown by the value of R =.313 and R^2 (adjusted) =.713, P = .001. The table further revealed that the variable (usefulness of digital learning environments for learning) are accounted to influence learning by 71.3%. However, the null hypothesis is rejected and we conclude that there is significant difference in the level of usefulness of digital learning environments for learning in Ogun state ($p<0.05$).

$H0_3$: There is no significant difference in the level of ease of use of digital learning environments for learning in Ogun state.

Table 3

Regression Analysis for hypothesis three

Model		**R**	**R-square**	**Adjusted R square**	**Std. Error**
Level of ease of use of digital learning environments for learning		.530	0.281	0.860	0.277
Model	**Sum of square**	**Df**	**Mean Square**	**F**	**Sig**
Regression	57.049	1	57.049	77.207	.001
Residual	146.306	238	.739		
Total	203.355	239			

Developed by authors

The result in Table 3 reveals that there is significant difference in the level of ease of use of digital learning environments for learning in Ogun state, this is shown by the value of R =.530and R^2 (adjusted) =.860, P = .001. The table further revealed that the variable (level of ease of use of digital learning environments) are accounted to influence learning by 86.0%. However, the null hypothesis is rejected and we conclude that there is significant difference in the level of ease of use of digital learning environments for learning in Ogun state ($p<0.05$).

$H0_4$: There is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on gender.

Table 4

T-test Analysis for hypothesis four

Variables	**Gender**	**Mean**	**S.D.**	***df***	**t**	**F**	**Sig.**
Level of use of digital learning environments for learning	Male	2.68	.970	238	1.975	13.301	.065
	Female	2.37	1.146				

Developed by authors

Table 4 shows the difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on gender. The table shows that there is no difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on gender (t = 1.975; *df* = 238; p=.065; P > .05). This implies that the level of use of digital learning environments for learning is not gender sensitive, both male and female students make use of the digital learning environments for learning.

$H0_5$: There is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level.

Table 5

T-test Analysis for hypothesis five

Variables	Level	Mean	S.D.	*df*	t	F	Sig.
Level of use of digital learning environments for learning	100level	3.22	.847	238	3.935	12.991	.322
	200level	2.82	1.125				
	300level	2.64	1.201				
	400level	2.12	1.366				

Developed by authors

Table 5 shows the significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level. The table shows that there is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level (t = 3.935; *df* = 238; p=.322; P < .05). This implies that all students across all levels make use of digital learning environments for learning.

DISCUSSION

Research hypothesis one revealed that there is a significant relationship between undergraduates' perception and use of digital learning environments for learning in Ogun state. This finding is consistent with the study of G. Basilaia (2020) who noted that digital learning environment is an operational process which traditionally takes place not in the classroom but in a synchronous or asynchronous way via the Internet. Synchronous learning takes place directly between teachers and students through a number of supportive channels, such as live reviews, live questions and answers, questionnaires and practice sessions. In comparison, asynchronous training takes place when learning is not specifically performed, for example, for primary school children whose tasks take place through WhatsApp.

Research hypothesis two revealed that there is significant difference in the level of usefulness of digital learning environments for learning in Ogun state. This is in line with the study of Vighnarajah et al. (2021) who stated that digital learning environments have rapidly transformed higher education, offering new opportunities and challenges for both educators and students. Digital learning environments have become an integral part of higher education, transforming the way undergraduates access, interact with, and engage in the learning process. The integration of technology in education has led to a shift from traditional classrooms to online platforms, and undergraduates' perceptions of these digital learning environments play a significant role in their effectivenss. A well-designed course is a cornerstone of effective digital learning. Instructors must structure their courses in a clear and organized manner.

Research hypothesis three revealed that there is significant difference in the level of ease of use of digital learning environments for learning in Ogun state. This is in line with the study of G. Quadri et al. (2018) who stated that digital learning environments have become integral to higher education, especially in recent years. As institutions increasingly adopt online and blended learning models, it is essential to examine how undergraduates perceive the ease of use of these digital platforms. Digital learning environments have transformed the landscape of higher education. Today's undergraduates have become increasingly reliant on digital platforms for accessing course materials, participating in discussions, and submitting assignments. The ease of use of a digital learning environment often hinges on its user interface. Undergraduates prefer platforms with intuitive designs that are easy to navigate. A clean and organized layout, logically structured menus, and clear labels contribute to a positive user experience. Complicated or cluttered interfaces can lead to frustration and hinder the learning process. The ability to access digital learning environments from various devices, including smartphones and tablets, is crucial. Undergraduates

appreciate platforms that are mobile-responsive, allowing them to engage with course materials on the go.

Research hypothesis four revealed that the level of use of digital learning environments for learning is not gender sensitive, both male and female students make use of the digital learning environments for learning. This is in line with the study of A. Salman et al. (2020) who stated that the flexibility to study anytime, anywhere, can greatly enhance the perception of ease of use. It is not enough for platforms to be mobile-responsive; they must also offer a consistent user experience across different devices. Undergraduates should be able to transition seamlessly between a desktop computer and a mobile device without losing access to essential features or content. A well-structured digital learning environment should provide clear navigation paths. Undergraduates should easily find their courses, assignments, and resources. Consistent menus and navigation patterns can help students move through the platform confidently. Personalization and customization options enhance ease of use. Platforms that allow undergraduates to adjust settings according to their preferences, such as notifications, display themes, and language preferences, empower students to create a learning environment that suits their needs.

Research hypothesis five revealed that there is no significant difference in the level of use of digital learning environments for learning among undergraduates in Ogun state based on level. This is in line with the study of Nguyen et al. (2022), who examined how teachers manage digital learning environments in the KKU Smart Learning Project. Their study showed that effective use of digital platforms depends heavily on how well users—both teachers and learners can access and navigate digital tools. They found that even when digital environments are available, actual usage is influenced by factors such as the availability of devices, internet stability, and digital literacy. This supports the present study's finding that students at different academic levels do not significantly differ in their usage, possibly because they face similar systemic conditions. Nguyen et al. also reported that challenges such as limited internet connection, inadequate digital devices, and low digital literacy affected the ability of teachers and learners to fully utilise smart learning technologies.

CONCLUSION

In conclusion, undergraduates in Ogun state have a positive perception of the accessibility, usefulness and ease of use of use of digital learning environments for learning. The findings also show that there is a significant influence of digital learning environments on learning among undergraduates in Ogun state. However, the study also identified some problems affecting the use of digital learning environments for learning, such as data insecurity, privacy issues, lack of access to necessary devices, and difficulties in navigating and understanding the features of certain digital learning environments. The findings of this study suggest that universities in Ogun state should take steps to improve the accessibility, usefulness, and ease of use of digital learning environments for learning. In addition, universities should provide training and support to undergraduates to help them overcome the problems they face when using digital learning environments for learning.

RECOMMENDATIONS

In view of the findings, the following recommendations were suggested:

- It is therefore strongly recommended that universities should ensure all campuses and student dormitories have access to stable and high-speed internet connectivity; make sure that all students have access to the necessary devices, such as laptops or tablets, to access digital learning environments, provide software licenses and necessary learning materials at no cost or at a subsidized rate to students.
- Universities should design and adopt digital learning platforms that are easy to navigate, understand, and use for students with all levels of digital literacy as well as employ clear instructions, intuitive interfaces, and accessibility features to ensure inclusivity.

- University management should provide incentives and support for faculty members to incorporate digital learning tools and methodologies into their courses; foster a culture of innovation and collaboration among faculty to promote effective use of technology in teaching and learning.
- Students should take advantage of the wide range of digital learning platforms, tools, and resources available to them and also engage with online courses, simulations, interactive exercises, and other digital materials to supplement your classroom learning.
- Undergraduates should cultivate the ability to learn independently and manage your time effectively in a digital learning environment, set realistic goals, prioritize tasks, and utilize digital tools to organize their studies and track their progress.
- Students should be mindful of their online behaviour, they should respect intellectual property rights, and protect their personal information when engaging in digital learning environments, and also adhere to ethical guidelines and promote responsible use of technology for learning purposes.

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СПРИЙНЯТА КОРИСНІСТЬ ТА ПРОСТОТА ВИКОРИСТАННЯ ЦИФРОВИХ НАВЧАЛЬНИХ СЕРЕДОВИЩ ДЛЯ НАВЧАННЯ СЕРЕД СТУДЕНТІВ БАКАЛАВРСЬКОГО РІВНЯ В ШТАТІ ОГУН (НІГЕРІЯ)

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У статті розглянуто сприйняту корисність та простоту використання цифрових навчальних середовищ для навчання серед студентів бакалаврського рівня штату Огун. Для дослідження було обрано описовий дизайн опитування. Метод простої випадкової вибірки застосовано для відбору 240 студентів бакалаврського рівня з Університету освіти Тай Соларін, Іягун, штат Огун. Інструментом збору даних була розроблена авторами анкета. Зібрані дані були проаналізовані за допомогою описової статистики (частотні підрахунки, відсотки та середні значення) та інференттної статистики (t-тест і ANOVA) на рівні значущості 0,05. Результати показали, що існує значущий взаємозв'язок між сприйняттям студентами та використанням цифрових навчальних середовищ. Існує суттєва різниця в рівні корисності цифрових навчальних середовищ, а також суттєва різниця в рівні простоти використання цифрових навчальних середовищ. Рівень використання цифрових навчальних середовищ не залежить від статі: як хлопці, так і дівчата активно використовують ці середовища для навчання. Не виявлено суттєвої різниці у рівні використання цифрових навчальних середовищ серед студентів бакалаврського рівня штату Огун залежно від рівня навчання. У підсумку встановлено, що використання цифрових навчальних середовищ сприяє навчанню студентів. Тому університети мають забезпечити наявність стабільного та високошвидкісного інтернету на всіх кампусах і в гуртожитках; гарантувати доступ усіх студентів до необхідних пристроїв, як-от ноутбуки чи планшети, для роботи в цифрових навчальних середовищах; надавати програмне забезпечення та необхідні навчальні матеріали безкоштовно або за пільговою ціною.

Ключові слова: *гендер, простота використання, рівень навчання, сприйнята корисність, студенти бакалаврського рівня, цифрові навчальні середовища.*