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E-Learning Management Systems Utilization in Public Universities in Ghana: Contextual Factors

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ABSTRACT

E-learning management systems (e-LMSs) are technologies that higher education institutions employ to facilitate teaching and learning. However, empirical data on contextual factors, including teaching activities in the e-LMS, administrative activities in the e-LMS, effectiveness of the e-LMS, technologies in learning networks, and perceived behavioral control of the e-LMS influencing students' use of the e-LMSs, appear to be lacking. Therefore, a cross-sectional survey design was employed to collect data from 531 students at Ghana's public universities. The data was analyzed using mean, percentage and standard deviation. The study found that students had positive perspectives on all the contextual factors. The study concludes that teaching and administrative activities should be performed in the e-LMSs. Additionally, universities should install effective e-LMSs and technologies. Finally, students should receive continuous training to build their self-efficacy in the use of e-LMSs.

Keywords: *e-learning; e-learning management systems; public universities; cross-sectional survey; Ghana*

INTRODUCTION

The twenty-first century has seen an exceptional boom in technical innovation (Kelentric et al., 2017). The fruition of ideas and innovations that emerged in the nineteenth century had a tremendous influence on the 21st century. In today's world, technology has woven itself into every aspect of civilization, leaving no area untouched. Its integration spans multiple domains, including the economy, healthcare, education, finance, tourism, and others. The pervasiveness of technology has ushered in a new era of opportunities and challenges, influencing how we live, work, and interact with the world around us.

The technological revolution and the expansion of e-services, which have changed how knowledge is provided, have profoundly helped the field of education. Technology has become a vital component for schools to remain competitive in the twenty-first-century educational landscape (Aldowah et al., 2017). It has not only increased the accessibility of education to students who were previously constrained by inadequate infrastructure by allowing them to access learning from the comfort of their own homes, but it also provides the option of getting tuition and certifications remotely. A plethora of educational resources are now easily accessible in online repositories, allowing students to access the information they require to assist their learning journey (Alshehri, 2020). Furthermore, artificial intelligence systems can help pupils with their academic achievements. The online world also offers assessment tools, which may be used to evaluate and improve learning. Undoubtedly, the good impact of technology on education is without dispute.

The components of technological growth within the field of e-learning services have radically transformed the educational landscape. Many universities have made major investments in purchasing these e-learning platforms. These platforms make it possible to deliver education online via virtual classrooms, webinars, and mobile learning. They provide cost-effective solutions, promote efficient educational resource management, are user-friendly, and are available regardless of geographical distance or time constraints. Furthermore, they are very scalable, serving a large

number of pupils at the same time. To communicate knowledge to students, e-learning uses the internet in conjunction with electronic devices such as computers, tablets, and smartphones (Abdullah & Ward, 2016). Receiving e-learning services would be difficult without these necessary devices. This technique has ensured that education is available at any time and from any location, with no restrictions (Maina & Nzuki, 2015). Furthermore, the success of e-learning extends beyond traditional academia, as business institutions use it to train widely distributed employees and clients across numerous branches. In the field of education, e-learning gives students more autonomy in their learning journey by making educational materials in multiple formats, such as text, videos, PDFs, and PowerPoints, readily available. The variety of e-learning possibilities available on the Internet encourages self-regulated learning, pushing students to take charge of their own educational progress, adopt effective learning practices, and nurture tenacity and determination.

E-LMSs are adopted by higher education institutions to provide e-learning services to students. E-learning is implemented within enterprises and higher education institutions by utilizing e-LMSs, which assist in broadening educational horizons. The rising demand for tertiary education, along with physical infrastructure difficulties, has prompted universities to implement e-LMSs. Nonetheless, several studies have found that the investments necessary for these systems are significant (Bravo et al., 2019; Juhanak et al., 2019; Khasawneh & Yaseen, 2017). With multiple instructional activities taking place within them, these systems play an important role in the total e-learning activities at universities. E-LMSs are now considered crucial components of both students' and teachers' educational experiences. Originally created to facilitate and centralize e-learning in educational institutions, these systems have evolved into advanced instruments for delivering education to varied regions around the world, as noted by Khasawneh & Yaseen (2017). Earlier research has noted that most higher education institutions have employed e-LMSs to deliver online courses (Dahlstrom et al., 2014).

While e-learning management systems (e-LMSs) have been widely adopted in universities around the world, multiple studies (Al-Mamary, 2022; Dampson, 2021; Alsuwailem, 2018; Kanwal & Rehman, 2017; Webbstock & Fisher, 2016; Choga, 2015) have shown that they are underutilized in sub-Saharan Africa. In response, a comprehensive review of the literature and bibliometric analysis of studies conducted in higher education over the last decade revealed a consistent focus on exploring various aspects, such as attitudes, satisfaction levels, experiences, readiness, acceptance, usability, technical support, training, and perceptions concerning e-LMSs (Araka et al., 2021; Alshorman & Bawaneh, 2018; Cheng & Yuen, 2018; Fathema et al., 2015). In addition, previous research has delved into predictive factors such as effort expectancy, system quality, performance expectations, behavioral intentions, perceived ease of use, and perceived usefulness of e-LMSs, examining their relevance for both students and lecturers using models such as the technology acceptance model and the unified theory of acceptance and use of technology (Nicholas-Omoregbe et al., 2017; Hadullo et al., 2017; Ain et al., 2016). It is worth noting that Ajzen's (1991) study implied that, while essential, these characteristics were voluntary and may not directly lead to students' use behavior of e-LMSs, an issue that was especially acute in the sub-Saharan African environment. As a result, Dampson (2021), Bervell & Arkorful (2020), and Sahoo et al. (2020) proposed that contextual factors that exhibit a constant and persistent influence on students' utilization of e-LMSs in higher education institutions should be investigated.

Certainly, despite the crucial role played by contextual factors such as teaching activities in the e-LMS, administrative activities in the e-LMS, effectiveness of the e-LMS, technologies in learning networks, and perceived behavioral control of the e-LMS in ensuring the continuity of teaching and learning during the COVID-19 pandemic, there remains a notable empirical void on them. As prior studies advocated for pragmatic factors in e-LMSs use, this study aimed to explore students' perspectives on these contextual factors influencing their use of e-LMSs. Thus, the following research question guides the study:

1. What are students' perspectives on the contextual factors (teaching activities in e-LMS, administrative activities in e-LMS, effectiveness of e-LMS, technologies in learning networks, and perceived behavioral control of e-LMS) influencing their use of e-LMSs in their university?

Administrative Activities in E-LMSs

University administration is a very cumbersome process, considering the large numbers of students who enroll in these institutions. Technology has been the tool that assists universities in efficiently managing students' information; without it, educational activities would have been very difficult. E-LMSs are used administratively to register courses, register students, check students' performance, communicate with students, and publish announcements. Educational institutions have used e-LMSs to plan, implement, facilitate, access, and monitor students' learning (Wright et al., 2014). The platform centralizes course preparation, delivery, and tracking of students' activity patterns. E-LMSs have become an institutional communication tool, and their presence has become ubiquitous in administering students and teachers. Also, they are used for documentation, tracking, administration, and reporting. E-LMSs play a supportive role for administrators and teachers in higher education (Kumar & Sharma, 2021). In this review, it appears that few studies have examined this factor. Also, there is scant empirical data on administrative activities in e-LMSs.

Teaching Activities in E-LMSs

E-LMSs serve as virtual spaces for teaching and learning, catering to both educators and students. Nearly all of these systems offer robust tools for instructors to monitor students' progress, and the data gathered plays a pivotal role in enhancing teaching quality. This data empowers educators to identify students in need of extra support. Teachers are central to the integration of technology in the educational landscape (Shin, 2015). They are key drivers of the successful implementation of e-LMSs (Sinclair & Aho, 2018). Encouraging online interactions, these interactions predominantly occur within e-LMSs. Thus, instructors are fundamental to shaping the e-learning experience for their students, and the extent of e-LMS adoption largely depends on them.

In some educational institutions, the use of e-LMSs is mandatory, while others grant teachers the discretion to decide. Teachers' beliefs and preferences significantly influence the ways in which they utilize e-LMSs. For instance, the University of Education, Winneba, in Ghana enforces the exclusive use of one e-LMS for online lessons, ensuring a consistent experience for both educators and students (Dampson et al., 2020). The extent to which teachers engage with e-LMSs, including their responsiveness to student inquiries and the quality of support they provide, directly impacts student satisfaction with the software. Furthermore, teachers' proficiency in technology is essential for crafting online courses that encourage student collaboration (Zanjani et al., 2016). These platforms enable educators to leverage tools such as learning modules, chat features, video conferencing, and lecture materials as teaching aids (Fathema et al., 2015; Walker et al., 2016).

Most instructors commonly use e-LMSs for communication, content delivery, student monitoring, and assessment purposes (Sackstein et al., 2019; Duin & Tham, 2020). These systems are valuable for uploading files, grading students, managing emails, and disseminating critical announcements. In addition, educators frequently use e-LMSs to design and oversee their lectures (Chen & Almunawar, 2019). Assessment tasks take precedence over content uploading in many instances (Chow et al., 2018; Chowdhury, 2019). Furthermore, these platforms have served as valuable tools for gathering performance data and making informed decisions about the learning process (Munoz, 2015; Heitink et al., 2016).

E-LMSs offer educators the opportunity to incorporate games, teaching methods, and simulations into their teaching strategies (Subhash & Cudney, 2018). These platforms also promote multi-

device learning, allowing students to access materials on various devices. However, not all tools within the e-LMS are utilized by educators. Instead, earlier studies suggest that their activities tend to revolve around content utilization, storage, and material downloads (Chow et al., 2018). The full potential for enhancing student learning outcomes can be realized when teachers harness the advanced capabilities of these systems in their teaching. Gomez (2015) and Wichadee (2015) noted that instructors primarily used e-LMSs for administrative tasks, such as course management and record-keeping, rather than pedagogical purposes. Thus, it was noted that there is a compelling need to shift from the administrative use of e-LMSs toward their more effective and efficient application in teaching (Nkonki & Ntlabathi, 2016).

Studies have shown that instructors' utilization of e-LMSs can be grouped into medium or high levels of activity. Those with high levels of activity tend to have more positive perspectives on the system (Ghilay, 2019). These educators use e-LMSs for communication, content management, user administration, monitoring, and evaluation. Therefore, the emphasis should be on promoting the effective use of e-LMSs for teaching and administrative tasks (Nkonki & Ntlabathi, 2016). The importance of investigating teaching activities within e-LMSs is underscored by the existing literature. However, there appears to be a lack of empirical data and findings specifically addressing this aspect, necessitating further research in this area.

Technologies in Students' Learning Networks

Technologies play a pivotal role in enhancing education, particularly in the transmission of instruction. As Cavus (2015) opined, technologies are widely employed in higher education institutions, reshaping the landscape of teaching and learning across various domains of human endeavor. These technologies have significantly improved the learning experience (Tu & Hwang, 2018; Aldowah et al., 2017). Universities commonly provide students with a range of technologies, such as reading, writing, recording, planning, and communication tools, aimed at accommodating diverse learning needs. Some of these technologies are particularly transformative for disabled students, breaking down barriers in their educational journey. Information and communication technologies serve as invaluable resources for students and educators, facilitating access to educational materials on the Internet. These devices come equipped with built-in features that enable connectivity to telecommunications systems and Internet access.

In today's classrooms and lecture halls, the availability of a blend of technology is crucial because the current generation of students are considered "technology natives" (Cavus et al., 2021). Technological tools have encompassed websites, virtual learning environments, databases, and networking applications (Seale et al., 2015). Additionally, dynamic technologies utilized by students have included telephones, cellular networks, satellites, televisions, radio, video conferencing, computers, the Internet, the World Wide Web, intranets, Wi-Fi networks, and software applications (Idorenyin & Donyaprueth, 2019). Popular devices found in classrooms include multimedia projectors, desktop computers, laptops, and tablets. Technologies like video conferencing and smart classrooms foster learner-centered environments that have promoted constructivist learning (Biney, 2020). Effective utilization of these technologies often requires proper training (Sackstein et al., 2019). Moreover, laptops, smartphones, tablets, and iPads are the common devices that have been used by students in university lecture rooms (Svoboda et al., 2018; Newhouse et al., 2015). These devices have become ubiquitous among tertiary students due to their portability and wireless capabilities (Al-Mashhadani & Al-Rawe, 2018). In fact, earlier studies indicate that smartphones have surpassed other computing devices in university settings (Chmiliar & Anton, 2018).

However, the proliferation of digital devices has not been without its challenges. Some of the earlier studies suggest that digital devices and social networking sites can be distracting for students,

potentially impacting their learning (Gok, 2016). Furthermore, some students have used their mobile devices for non-course-related activities during lectures (Witecki & Nonnecke, 2015). Consequently, some instructors do not permit mobile devices in their classrooms, as they consider them detrimental to the learning experience (Matarirano et al., 2020).

In summary, technology plays a vital role in modern higher education, offering students a wide array of digital devices and applications to enhance their learning experience. While the benefits are clear, educators and institutions must address challenges related to technology use to ensure that students' learning is not compromised. Research on students' technology usage in their learning networks warrants further investigation.

Students' Perceived Behavioral Control of E-LMSs

Perceived behavioral control and behavioral intentions has played a crucial role in influencing the use of a system, as proposed by Fishbein & Ajzen (1975). Furthermore, perceived behavioral control, often referred to as self-efficacy, has represented an individual's perception of how easy or challenging it is to perform a specific behavior, or the belief that they can control that behavior (Ajzen, 1991, p. 188). In essence, the earlier studies suggest that it reflects one's judgment of their ability to execute a behavior, hinging on their confidence in their own capacity (Chiou, 1998, p. 299). Alkhawaja et al. (2021) similarly defined perceived behavioral control as a user's confidence in their ability to carry out academic tasks using an e-LMS. In this study, perceived behavioral control is defined as students' perceived knowledge, confidence, and ability to navigate their university's e-LMS. This factor is a strong predictor of performance during the actual user experience and can either facilitate or hinder a particular behavior. Factors such as increased autonomy, managerial support, reduced work overload, personal innovativeness, and reduced computer anxiety have been found to enhance students perceived behavioral control (Elie-Dit-Cosaque et al., 2011). This factor can significantly contribute to a sense of control when it comes to information systems in an educational setting. The degree of readiness, knowledge, and skills also play a crucial role in determining perceived behavioral control when executing a behavior (Otchengco & Akiate, 2021). The intention to perform a behavior is the proximate determinant of that behavior, representing a deliberate decision to exhibit that behavior (Uludag et al., 2021). Cigdem and Topcu (2015) acknowledged that the adoption and use of e-LMSs heavily depend on users' behavioral intentions. Though the review underscores the role of perceived behavioral control on students' use of e-LMSs, data from very few empirical studies exist on this factor.

Effectiveness of E-LMSs

Various studies have delved into the dimensions of technology utilization theory, particularly concerning the effectiveness of e-LMSs. According to Ghilay (2019), e-LMSs are highly effective for educators who possess the requisite knowledge and skills, leading to increased engagement with these systems. Another study by Holmes & Prieto-Rodriguez (2018) found that students deemed the components of e-LMSs highly effective, with their ratings indicating a very positive perception of the system's effectiveness. However, the students' evaluations of the system were considerably more favorable than those of their teachers. In their investigation, Syaad & Hidayat (2018) demonstrated the high usability and effectiveness of Moodle, as an e-LMS. Similarly, studies by Rahrouh et al. (2018), Muruthy & Yamin (2017) have underscored the effectiveness of the Moodle e-learning platform. E-LMSs are most effective when users are computer literate, possessing the requisite skills and knowledge. Additionally, the system's perceived usefulness, ease of use, and navigation significantly impacted its effective utilization (Holmes & Prieto-Rodriguez, 2018). Masood & Musman (2015) earlier provided support for the effectiveness of the e-LMS (eLearn@USM) at the University of Sains Malaysia, as evidenced by observations, interviews, and questionnaires administered to eight students. Descriptive analysis of the collected

data revealed that the students, with an average rating of 3.5, affirmed the system's effectiveness, particularly in terms of its forum functionality. Further investigations on this factor are required since the review indicates that empirical data on it is scant.

METHODOLOGY

The study sought to explore students' perspectives on the contextual factors influencing their use of an e-LMS in their university at a snapshot. This necessitated the adoption of a cross-sectional survey design. The target population of the study was all students in the 15 public universities in Ghana who have had the opportunity to use their university's e-LMS for 12 months and over. However, it was impossible to access the entire population, so continuing students from three public universities in Ghana constituted the accessible population because the administrators of these three universities offered the opportunity to the researcher to collect data. Thus, two hundred and eight thousand and seventy (208,070) students constituted the accessible population. These universities have natural clusters of faculties and departments, so a multistage sampling procedure was used to sample students for the study. At the first stage, one faculty was selected from each of the universities using a simple random sampling technique employing the randomizer software as recommended by Johnson & Christensen (2017). At the second stage, one department was randomly selected from each of the faculties using a simple random sampling technique employing the randomizer software. In the departments, a simple random sampling technique employing the randomizer was used to select students based on the sample sizes suggested by Krejcie & Morgan's (1970) table. A total of 825 students were selected from the three departments to respond to the questionnaire. At the end, 531 questionnaires were fit for analysis because some were not returned and others had missing values The 531 questionnaires used for the analysis exceed the value recommended by Krejcie & Morgan's (1970) table considering the accessible population. The questionnaire used for the data collection was scaled using the five-point Likert type and had all its items adapted from the literature. The questionnaire was pre-tested among similar respondents to the final sample, which yielded a total Cronbach alpha reliability of 0.957.

RESULTS

Students' Perspectives on the Contextual Factors

In this section, insights were gathered from students regarding various aspects following the implementation of e-Learning Management Systems (e-LMS) at their university. The focus was on contextual factors such as the perceived control of the e-LMS, effectiveness of the e-LMS, technologies in learning networks, teaching activities in the e-LMS, and administrative activities in the e-LMS. This section specifically addresses the research question, which seeks to understand students' viewpoints on the factors influencing their use behavior of the e-LMS. To analyze these perspectives, frequencies, percentages, means, and standard deviations were employed. This approach was chosen as the research question is primarily descriptive in nature. Students were tasked with rating their perspectives on the indicators of these factors, utilizing a five-point Likert-type scale. The ratings 1, 2, 3, 4, and 5 indicate strongly disagree, disagree, undecided (unsure), agree, and strongly agree, respectively. The mean scores of the indicators and those of the constructs within the mean ranges of 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5-4.49 (agree); and 4.5-5.0 (strongly agree) were used to discuss the results.

Students' perspectives on their perceived behavioral control of their university's e-LMS

This section sought to find out students perspectives on their perceived behavioural control of the e-LMS. Table 1 shows data on students' perspectives on their perceived behavioural control of their university e-LMS.

Table 1: *Students' perspectives on their perceived behavioural control of their university's e-LMS*

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
I am confident to use the university's e-LMS.	5(0.9)	24(4.5)	48(9.0)	256(48.2%)	198(37.3)	4.16	0.839
I have the knowledge to use the university's e-LMS.	9(1.7)	59(11.1)	76(14.3)	247(46.5)	140(26.4)	3.85	0.991
I find it easy to use the university's e-LMS.	10(1.9)	86(16.2)	101(19.0)	189(35.6)	145(27.3)	3.70	1.093
I have the ability to use the university's e-LMS.	7(1.3)	56(10.5)	89(16.8)	251(47.3)	128(24.1)	3.82	0.959

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5- 4.49 (agree); 4.5-5.0 (strongly agree).

A mean of means of 3.88 and an SD of 0.97 indicate that students agree that they have behavioural control of their university's e-LMS.

Table 1 shows that the responses to students' pereceived behavioral control of e-LMS were diverse. Specifically, 37.3% and 48.2% of the respondents, respectively, strongly agreed and agreed that they were confident to use their university's e-LMS. Additionally, 9.0% of them were unsure of their confidence to use the system, while 0.9% and 4.5% strongly disagreed and disagreed that they have the confidence to use the system. This yielded a mean and standard deviation of 4.16 and 0.839, respectively. Similarly, 26.4% and 46.5% of the respondents, respectively, strongly agreed and agreed that they have the knowledge to use the university's e-LMS, while 1.7% and 11.1% of them strongly disagreed and disagreed with the statement. 14.3% of the respondents were unsure of their knowledge to use their university's e-LMS. This yielded a mean and standard deviation of 3.85 and 0.991, respectively. Again, 27.3% and 35.6% of the respondents, respectively, strongly agreed and agreed that they find it easy to use the university's e-LMS; 19.0% of them were unsure of their response to the statement. Moreover, 1.9% and 16.2% of the respondents, respectively, strongly disagreed and disagreed with the statement. This produced a mean and standard deviation of 3.70 and 1.093, respectively. Also, 24.1% and 47.3% of the respondents, respectively, strongly agreed and agreed that they have the ability to use their university's e-LMS. And finally, 16.8% of them were unsure of their response to the statement, whereas 1.3% and 10.5% strongly disagreed and disagreed with the statement. This produced a mean and standard deviation of 3.82 and 0.959, respectively.

In summary, the overall mean of means (3.88) falls within the range of 3.5 - 4.49, leading to the conclusion that students generally agree that they perceive behavioral control over their university's e-LMSs.

Students' perspectives on the effectiveness of their university's e-LMS

Table 2 presents an analysis of students' views on the effectiveness of their university's e-LMS.

Table 2: *Students' perspectives on the effectiveness of their university's e-LMS*

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
The university's e-LMS allows download of files.	5(0.9)	38(7.2)	115(21.7)	218(41.1)	155(29.2)	3.90	0.934
The university's e-LMS allows upload of files.	3(0.6)	42(7.9)	124(23.4)	235(44.3)	127(23.9)	3.83	0.902
The university's e-LMS allows information exchange among students and	5(0.9)	58(10.9)	100(18.8)	242(45.6)	126(23.7)	3.80	0.954
Examinations and quizzes can be written in the university's e-LMS	4(0.8)	42(7.9)	39(7.3)	260(49.0)	186(35.0)	4.10	0.895
The university's e-LMS allows video streaming of lectures.	14(2.6)	51(9.6)	127(23.9)	229(43.1)	110(20.7)	3.70	0.989

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5- 4.49 (agree); 4.5-5.0 (strongly agree).

The mean of means was calculated as 3.87 and the SD as 0.93, indicating that students agree that their university's e-LMS is effective.

The results in Table 2 reveal that the majority of the respoondents were in agreement with the statement that assessed the effectiveness of their university's e-LMS as follows:

- 41.1%, (Agree) and 29.2% (Strongly Agree) of respondents respectively, were in agreement that their university's e-LMS allows download of files. This yielded a mean of 3.90 and an SD of 0.934.
- 44.3% (Agree), and 23.9% (Strongly Agree) of the respondents, were in agreement that their university's e-LMS allows upload of files. This produced a mean of 3.83 and an SD of 0.902.
- 45.6% (Agree) , and 23.7% (Strongly Agree) of the respondents, respectively, agreed that their university's e-LMS allows information exchange among students. This produced a mean of 3.80 and an SD of 0.954.
- With regard to their ability to write examinations and take quizzes via the e-LMS the data shows that 49.0%, (Agree) and 35.0% (Strongly Agree) of the respondents were in agreement. This produced a mean of 4.10 and an SD of 0.895.
- Furthermore, the data in Table 2 reveals that 43.1% (Agree) and 20.7% (Strongly Agree) of the respondents, respectively, agreed that their university's e-LMS allows video streaming of lectures. This produced a mean of 3.70 and an SD of 0.989.

In summary, the calculated mean of means (3.87) falls within the range of 3.5 - 4.49, indicating a general agreement among students that their university's e-LMS is effective.

Students' perspectives on the technologies in their learning networks

In Table 3, data on students' perspectives on the technologies available in their learning networks are presented.

***Table 3**: Students' perspectives on the technologies in their learning networks*

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
I have digital device(s) in my	23(4.3)	75(14.1)	109(20.5)	209(39.4)	115(21.7)	3.60	1.104
I have internet connection (s) in	24(4.5)	42(7.9)	80(15.1)	282(53.1)	103(19.4)	3.75	1.003
I have learning applications in my learning networks.	14(2.6)	65(12.2)	127(23.9)	223(42.0)	102(19.2)	3.63	1.011

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5- 4.49 (agree); 4.5-5.0 (strongly agree).

A mean of means of 3.66 and an SD of 1.04 demonstrate that students have technologies in their learning networks.

The data in Table 3 shows that 66.5 % of the respondents (39.4% - Agree, and 21.7% - Strongly Agree) were in agreement that digital device(s) are available in their learning network. This yielded a mean of 3.60 and an SD of 1.104. Further, 72.5% of the respondents (53.1% - Strongly Agree and 19.4% - Agree) were in agreement that they have Internet connection(s) in their learning network. This produced a mean of 3.75 and a standard deviation of 1.003. In addition, Further, 61.2% (42.0% - Agree and 19.2% - Strongly Agree) of the respondents were unsure. This produced a mean of 3.63 and a standard deviation of 1.011.

In summary, because the overall mean of means (3.66) falls within the range of 3.5–4.49, the data suggest that there are technologies available in students' learning networks.

Students' perspectives on teaching activities in their university's e-LMS

Table 4 illustrates students' perspectives on teaching activities in their university's e-LMS.

***Table 4**: Students' perspectives on teaching activities in their university's e-LMS*

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
Lecturers upload content into the university's e-LMS.	6(1.1)	30(5.6)	85(16.0)	247(46.5)	163(30.7)	4.00	0.892
Lecturers conduct examinations in the university's e-LMS.	14(2.6)	54(10.2)	72(13.6)	233(43.9)	158(29.8)	3.88	1.032
Lecturers teach online in the university's e-LMS.	26(4.9)	81(15.3)	78(14.7)	254(47.8)	92(17.3)	3.57	1.092
Lecturer communicate with students through the university's e-LMS.	19(3.6)	72(13.6)	57(10.7)	258(48.6)	125(23.5)	3.75	1.071

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5- 4.49 (agree); 4.5-5.0 (strongly agree).

A mean of means of 3.80 and an SD of 1.02 indicate that teaching activities are undertaken in the e-LMSs of public universities in Ghana.

Table 4 reveals that the majority of students agreed that 46.5% - Agree; 30.7% - Strongly Agree), that lecturers upload content into their university's e-LMS. This produced a mean of 4.0 and an SD of 0.892. Further respondents agreed (43.9% - Agree; 29.8%- Strongly Agree) that lecturers conduct examinations in their university's e-LMS. This produced a mean of 3.88 and an SD of 1.032. There was also agreement that lecturers teach online in their university's e-LMS (47.8% - Agree, 17.3% Agree). This produced a mean of 3.57 and an SD of 1.092. Furthermore, the data in Table 4 indicates that there was agreement lecturers communicate with the students through the e-LMS (48.6% - Agree; 23.5% - Strongly Agree). This produced a mean of 3.75 and an SD of 1.071.

In summary, because the overall mean of means (3.80) falls within the range of 3.5–4.49, the data suggest that lecturers perform their teaching activities in their university's e-LMS.

Students' perspectives on administrative activities in their university' e-LMS

Table 5 presents students' perspectives on administrative activities in their university's e-LMS.

Table 5: *Students' perspectives on administrative activities in their university's e-LMS*

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
Academic calendars are published in the university's e-LMS.	19(3.6)	93(17.5)	91(17.1)	227(42.7)	101(19.0)	3.56	1.093
Announcements are displayed in the university's e-LMS.	21(4.0)	86(16.2)	78(14.7)	226(42.6)	120(22.6)	3.64	1.117
Training and support sessions are held in the university's e-LMS.	9(1.7)	70(13.2)	89(16.8)	249(46.9)	114(21.5)	3.73	0.996
Course are managed in the university's e-LMS.	23(4.3)	98(18.5)	107(20.2)	180(33.9)	123(23.2)	3.53	1.159
Webinars are held in the university's e-LMS.	41(7.7)	89(16.8)	141(26.6)	205(38.6)	55(10.4)	3.27	1.098

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5- 4.49 (agree); 4.5-5.0 (strongly agree).

A mean of means of 3.55 and an SD of 1.09 suggest that administrative activities are done in the e-LMSs of public universities in Ghana.

The data in Table 5 indicates general agreement that many of the administrative activities are conducted in the e-LMS.

- academic calendars are published in their university's e-LMS: 3.6%, 17.5%, 17.1%, 42.7%, and 19.0% of the respondents demonstrated strongly disagree, disagree, unsure, agree, and strongly agree, respectively. This produced a mean of 3.56 and an SD of 1.093.
- announcements are displayed in their university's e-LMS: 4.0%, 16.2%, 14.7%, 42.6%, and 22.6% of the respondents, respectively, demonstrated strongly disagree, disagree, unsure, agree, and strongly agree. This produced a mean of 3.64 and an SD of 1.117.
- training and support sessions are held in their university's e-LMS: 1.7%, 13.2%, 16.8%, 46.9%, and 21.5% of the respondents demonstrated strongly disagree, disagree, unsure, agree, and strongly agree, respectively. This produced a mean of 3.73 and an SD of 0.996.
- courses are managed in their university's e-LMS: 4.3%, 18.5%, 20.2%, 33.9%, and 23.2% of the respondents, respectively, demonstrated strongly disagree, disagree, unsure, agree, and strongly agree. This produced a mean of 3.53 and an SD of 1.159.
- webinar sessions are held in their university's e-LMS: 7.7%, 16.8%, 26.6%, 38.6%, and 10.4% of the respondents, respectively, demonstrated strongly disagree, disagree, unsure, agree, and strongly agree. This produced a mean of 3.27 and an SD of 1.098.

In summary, because the mean of means (3.55) falls within the range of 3.5 - 4.49 the data suggest

that it can be concluded that management performs its administrative activities in the university's e-LMS.

DISCUSSION

Students perspectives were sought on the contextual factors that influence their use of the e-LMS. The study found that students had positive perspectives on all the contextual factors. First, students perceived their university e-LMS as easy and simple to use; and that they have the confidence and capacity to use it. Thus, they have perceived behavioral control of the system. This finding corroborates the findings of Bradley (2021) and Tagoe & Abankah (2014). Secondly, students perspectives were that their university's e-LMS was effective. They agreed that the system is able to support the download and upload of files and allows examinations and quizzes to be undertaken. This result is consistent with the studies of Holmes & Pereto-Rodriquez (2018) and Syaad & Hidayat (2018), on the effectiveness of the e-LMS. The majority of students perspectives were that there are technologies available in their learning networks, such as digital devices, Internet connectivity, and software The findings of this study corroborate those of Idorenyin & Donyaprueth (2019), which found that most universities have installed technologies on their campuses to support teaching and learning. Finally, students were of the view that lecturers use the university e-LMSs to teach, upload teaching and learning materials, and they communicate with students and conduct examinations in the university e-LMS. The finding is in line with the study by Sackstein et al. (2019), which asserted that lecturers use the e-LMSs to interact with their students, teach them, and grade them. Finally, the students perspective was that administrative activities are performed in their university e-LMSs. Academic calendars, timetables, and announcements are displayed in their university's e-LMS. This finding supports the studies of Wright et al. (2014) and Kumar & Sharma (2021), which found that e-LMSs provide spaces for administrative activities in higher education institutions.

CONCLUSION AND RECOMMENDATION

The purpose of the study was to explore students' perspectives on the contextual factors influencing their use of e-LMSs. The study found that the majority of the students had a positive perspective on all the contextual factors (teaching activities in the e-LMS, administrative activities in the e-LMS, effectiveness of the e-LMS, technologies in learning networks, and perceived behavioral control of the e-LMS) in their university. Thus, the study recommends that students be given consistent and continuous training on the use of e-LMSs to build their behavioral control and self-efficacy with these systems. Additionally, the study recommends that universities should perform their institutional activities, such as teaching and administration, in their universities' e-LMSs. Moreover, universities should install effective e-LMSs and provide students with technologies that could be used to access e-LMSs.

Limitations

The study relied on self-reported measures since questionnaires were used for the data collection; however, respondents were assured of their anonymity for the study. Thus, they were asked to provide their genuine responses to the questionnaire.

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