Determinants of Learning Management System Adoption in an Era of COVID-19: Evidence from a Ghanaian University

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ABSTRACT

The integration of technology in higher education has reached a new dimension following the outbreak of the COVID-19 pandemic. Institutions of higher learning such as the University of Education, Winneba have been compelled to expand its technological infrastructure for pedagogical purposes. It however appears that there is a dearth of knowledge regarding the students’ adoption of the University of Education, Winneba’s (UEW) Learning Management Systems (LMS) in an era of COVID-19. This study, therefore, assessed the determinants of e-learning adoption in an era of COVID-19 from the perspective of students in UEW. The explanatory sequential design was employed. The study randomly sampled 3272 students for quantitative data whilst 20 students were purposively sampled for the qualitative data. The quantitative data were analysed through Means and Standard Deviations as well as Stepwise Regression. The qualitative data were content analysed. The study found that the level of adoption of the LMS among UEW students was moderate. The study further established that perceived usefulness, perceived ease of use and attitude towards the LMS were significant predictors of students' adoption of the LMS. Nonetheless, age, faculty and level of ICT skills mediated the level of adoption of LMS. The study recommends that the Management of UEW LMS continue to conduct pragmatic and purposeful seminars and workshops to educate students about the adoption and benefits they stand to gain in using the LMS for their academic activities. Again, management needs to consider the age, faculty and level of ICT skills of the students in the implementation of subsequent online platforms for students.

Keywords: Learning Management System, E-learning, Pedagogy, Determinants, COVID-19.

I. INTRODUCTION

The advent of the coronavirus pandemic (COVID-19) has triggered an extraordinary global education emergency. Reference [1] indicate that as of March 29, 2020, there were over 1.5 billion students out of school globally. Out of these statistics, Ghana alone accounted for 9,696,756 children and youth. The shutdown of schools coupled with other social distancing protocols has forced countries to adopt emergent management mechanisms to ensure that teaching and learning continue unhindered. Accordingly, governments, educational institutions and development agencies across the globe have recognized online learning platforms as a key companion in educational delivery. Reference [2] maintains that large-scale, national efforts to utilize technology in support of remote learning, distance education and online learning during the COVID-19 pandemic are not only emerging and evolving quickly but are instrumental in the pursuit of social distance protocols while optimizing value-for-money. This has far-reaching benefits to all countries, both developed and developing. Indisputably, online learning and virtual pedagogy remain the fulcrum to deliver education and undisrupted learning as schools send students home to contain COVID-19 infections.

The trends of technology adoption for educational delivery have been well documented throughout the world before the advent of COVID-19. In Africa for instance, it was posited that the adoption of Learning Management Systems (LMS) in tertiary institutions reached exponential height as of 2005 [3]. Reference [4] define LMS as a “server-based or cloud-based software programme containing information about users, course and content which provides a place to learn and teach without depending on the time and space boundaries” (p. 1). Hence, a survey conducted in 42 countries across the continent revealed that a wide range of different e-learning practices was being utilized across the continent with the use of computers and the internet still in its infancy stage [5]. Therefore, the majority of its usage was rudimentary but there was a great deal of excitement among people for exploiting the potential of e-learning. On the global stage, however, [6] predicted that e-learning was evolving as the latest mainstream educational model with a growth rate of 35.6 % annually. It was not surprising to see that [7] projected that LMS adoption would increase at a rate of 15% every year between 2011 and 2016. In the United Kingdom, [8] found that the adoption of LMS by students was 82%. Reference [9]
found that only 20% of students were using LMS in Tanzania. In Ghana, [10] revealed that the adoption rate of LMS in Ghanaian universities was 81%. The findings of Dei’s study show that the Management of universities in Ghana have built good justification for adopting e-learning as a new educational delivery model and have shown commitment by investing in developing the technological infrastructure required for e-learning as compared to other countries in the sub-region [11]. This impetus has heightened especially in the era of COVID-19.

Globally, various online platforms are often adopted for teaching and learning purposes in tertiary institutions. For instance, in the USA, the well-known platforms for teaching and learning include ANGEL, BB Learn, Canvas, Desire2Learn, Moodle and Sakai [12]. [4] postulate that the most widely adopted LMS on the African continent include Blackboard, Sakai, KEWL and Moodle. Similarly, various online-learning platforms are adopted in universities in Ghana. Whereas the University of Ghana employs the Sakai for teaching and learning purposes, the Kwame Nkrumah University of Science and Technology and the University of Education, Winneba use the Moodle. Specifically, the University of Education, Winneba employs the LMS version of Moodle for teaching and learning.

The centrality of LMS in educational delivery in the 21st Century is never in doubt. Reference [13] indicate that LMS can centralize and simplify management to use self-service and guided services; to easily compile and deliver learning materials; to integrate training programmes on a flexible web-based platform; to promote portability, standards, personalize information and reuse expertise. In essence, LMS is used for both pedagogical and administrative purposes in institutions of higher learning. However, various users of e-learning platforms such as LMS mostly stop using it after their initial experience [14]. Extant literature suggests that the use of online learning platforms such as the LMS is fraught with numerous challenges. For instance, [15] opined that the use of ICT applications in institutions of higher learning such as the universities is prone to lack of access to computers, internet connectivity and other related risks such as low level of competencies among students and lecturers. Other studies, [2] and [16] have also shown that certain deficiencies such as the weakness of online teaching infrastructure, the inexperience and lack of skills among teachers and learners on online Moodle usage, the level of ICT skills, the complex environment at home, among others militate against the realization of successful technology integration in the classroom. Similarly, [17] indicate that there continues to be a vastly unequal digital starting point for young urban citizens, who are already held by poverty and social exclusion. In particular, even students with access to devices may not have the digital skills to learn effectively online. This observation is worrying because students and lecturers are a vital link to the motivational drive in the education chain to respond to 21st century educational needs.

Even though various studies have been conducted to ascertain the factors that predict students’ use of e-learning platforms such as the LMS, their findings remain inconclusive. For instance, [6] revealed that learner computer anxiety, instructor attitude toward e-learning, e-learning course flexibility, e-learning course quality, perceived usefulness, perceived ease of use, and diversity in assessments are crucial factors that predict learner use of e-learning platforms. Similarly, [18] found in their study on LMS adoption in higher educational institutions in Sub-Saharan universities that the key determinants of LMS adoption and adoption intention include user Attitude (A), Perceived Usefulness (PU), Performance Expectancy (PE), Perceived Ease of Use (P), Social Influence Expectancy (SI) and Self-efficacy (S). In Ghana, [19] conducted a quantitative study on the adoption of the Sakai Learning Management Systems (SLMS) at the University of Ghana and revealed that the intention to use SLMS is determined by performance expectancy, social influence and facilitating conditions. Additionally, it was established that whilst age has a moderating effect on student’s intention to use the SLMS, the gender of the students does not moderate any of the factors [19]. In another study on the adoption of SLMS in the University of Ghana, [20] found that the intention of the lecturers to adopt the system is influenced by factors such as availability and reliability of the system. Other factors that came to the fore in their studies included response time, security and how the system can help them carry out the basic task and as well as the design functionality of the system. Both studies which were conducted at the University of Ghana were limited to the use of quantitative approaches. In a contradictory study, [21] investigated the factors that affect the post-implementation of a web based LMS at the University of Professional Studies and established that the level of adoption of LMS seems very low due to poor IT infrastructure, inadequate training, and the relevance of the system to quality lecture delivery. However, their intention to use LMS coupled with the usefulness of LMS were high. Moreover, [22] established that e-learning adoption among university students in Ghana was determined by perceived usefulness and attitude towards technology use. However, factors such as computer self-efficacy as well as perceived ease of use were not significant predictors of students’ adoption of e-learning.

Besides, demographic differences in technology and computer applications in education have received the attention of researchers in recent years. In Malaysia for instance, [23] disclosed that male students have higher perceived ICT competency than their female counterparts. Additionally, basic activities such as handling computer hardware and performing computer maintenance are still dominated by males [24]. Reference [25] showed that female students seem to have a lower self-efficacy compared to males especially in more complicated computer tasks. Their study further revealed that regardless of their gender, the students could perform most of the common computer tasks such as copying text and saving documents, word processing, or using a drawing programme. For less common and more advanced computer skills, such as sending an attachment via e-mail, forwarding an e-mail, and downloading programs or documents from the Internet, boys showed more self-efficacy than girls [25].

In reviewing the above studies, there seems to be a disparity between female and male students in terms of their self-efficacy in ICT applications in the classroom. While some researchers argue that males are more efficacious than their female counterparts, others insist that females can prove

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their worth and achieve at par with the males. Therefore, it would be noteworthy to find out how demographic variables of students affect the perceived ICT competencies of undergraduate students at the University of Education, Winneba, Ghana amidst widespread belief that computers and the internet are male-dominated technologies.

It is understood from this viewpoint that for virtual learning platforms such as the UEW-LMS to effectively respond to the dying needs of students in troubled times like the COVID-19 pandemic, students attributes such as their level of knowledge, skill, personal dispositions, and capabilities towards virtual learning cannot be downplayed. Reference [26] concur with this exposition by indicating that before virtual learning platforms can be effectively assimilated and integrated by lecturers and students, there ought to be adequate training and support in ICT and pedagogy to both lecturers and students. Such training should be premised on the personal characteristics of the lecturers as well as students. There is, therefore, no doubt why personal characteristics need to be considered as important factors for the successful assimilation of technology for teaching and learning in educational institutions. Without these developments, the core mandate of the institution of virtual learning platforms for ensuring continuous teaching and learning amidst the COVID-19 pandemic would be a mirage. This development further confirms the conviction of the researchers on the dying need for a critical assessment of users' of UEW-LMS of their characteristics and how it would impact their use of MOODLE if the University desires to recoup the benefits behind such investment.

This study was underpinned by the Technology Acceptance Model [27]. This model operates on the assumption that the Behavioural Intention to Use (BI) technology and the Actual Use of technology is determined by Attitude toward Using (A) technology. However, the attitude of the user towards technology is predicated on the Perceived Usefulness (U) of the technology coupled with the Perceived Ease of Use (E) of the technology. Interestingly, Perceived Usefulness (U) and Perceived Ease of Use (E) are predicted by extraneous variables such as the social conditions in the environment. As a lens for this study, it is argued that even though in the era of COVID-19 the use of technology such as the LMS for teaching and learning has become mandatory, its adoption by the students depends greatly on Perceived Usefulness (U) and Perceived Ease of Use (E) which would inform or determine the Attitude Toward Using (A) LMS. That is, students will adopt the LMS for learning purpose if it enhances their learning and also free from effort (Davis, 1989). However, extraneous variables such as the demographic characteristics of the students including their self-efficacy could moderate the Perceived Usefulness (U) and Perceived Ease of Use (E) of the LMS. It is, therefore, necessary to investigate the determinants of LMS adoption in the era of COVID-19 as well as the extraneous factors that could moderate these determinants.

II. PURPOSE OF THE RESEARCH

As an institution of higher learning, the University of Education, Winneba like other universities worldwide utilize the LMS. However, its usage for instructional delivery until the outbreak of the novel coronavirus has been very limited. With the outbreak of the COVID-19, however, the use of the LMS for teaching and learning purposes has heightened with more than 100,000 users comprising students and lecturers. With the earlier concerns about the use of LMS being fraught with usability, technical and implementation difficulties resulting in user dissatisfaction [27, 28], one is likely to allege that the charismatic adoption during the coronavirus pandemic is likely to be greeted with technical, institutional and users’ characteristics challenges even though there is no empirical evidence to support the allegation. Indeed, a search for available literature on the determinants of students' adoption of the LMS in the University of Education, Winneba revealed that no studies have been conducted on the issue in the University. Besides, most studies [19]-[21] conducted on the determinants of LMS adoption in Ghana employed the quantitative approach. To address the unforeseen challenges in using UEW LMS calls for a study into the determinants of students' adoption of the LMS in the University of Education, Winneba and the demographic characteristics that could moderate these determinants would offer a cardinal field of study.

III. RESEARCH QUESTIONS

The following research questions guided the study:
1. What is the level of adoption of LMS among students in the University of Education, Winneba in an era of COVID-19?
2. What are the determinants of students’ level of adoption of the LMS in the University of Education, Winneba in an era of COVID-19?
3. Which combination of demographic variables would enhance LMS adoption by students of the University of Education, Winneba in terms of age, faculty, and level of ICT skills?

IV. METHODOLOGY

A. Research Approach and Design

Based on the pragmatism philosophy, this study collected both quantitative and qualitative data in which it was envisaged that there was much to be gained from blending quantitative and qualitative methods where the determinants of LMS adoption was studied at different angles [30]. Accordingly, this study utilized the explanatory sequential mixed method design in which subsequent analyses provided general and in-depth understanding of the research problem.

B. Study Respondents

The target population included all the students of the University of Education, Winneba whereas the accessible population included all students ten (10) namely: Faculty of Educational Studies, Faculty of Social Sciences Education, Faculty of Foreign Languages and Communication, Faculty of Ghanaian Languages Education, Faculty of Science Education, School of Creative Arts, School of Business, Faculty of Technical Education, Faculty of Agricultural Science Education and Institute of Distance Education and e-Learning. Data from [31] indicates that the accessible
population for the study was 45,571. Using the proportionate stratified random sampling technique, 3272 were sampled from the ten (10) faculties for the quantitative phase of the study. Twenty (20) students were purposively sampled for the qualitative phase of the study.

C. Instrumentation

A research designed structured questionnaire with 40 close-ended items and a semi-structured interview guide were used for the study. The questionnaire was made up of three parts. Part one gathered the demographic information of the students such as sex, age, faculty, and programme of study. Part two contained items on their adoption of LMS, measured on a 5-point Likert Scale such that 1=Never, 2=Rarely, 3=Occasionally, 4= Almost every time, and 5=Every time. Part three collected data on the determinants of adoption. Four determinants with five items each were identified in the study. These included perceived usefulness, perceived ease of use, attitude and self-efficacy. The variables were measured on a 5-point Likert scale such that 1=Strongly Disagree, 2=Disagree, 3=undecided, 4= Agree, and 5=Strongly Agree. After the questionnaire has been collected and analysed, a semi-structured interview guide was designed based on the findings and administered by the researcher to collect in-depth information from the students to help explain the quantitative results.

D. Reliability and Trustworthiness of Instruments

The overall reliability for the quantitative instrument was 0.80. Reference [32] maintain that the reliability coefficient should be at least 0.70. The Cronbach alpha coefficient of 0.78 for adoption, 0.84 for perceived usefulness, 0.87 for perceived ease of use, 0.79 for attitude and 0.81 for self-efficacy is proof that the questionnaire was reliable. Regarding the semi-structured interview guide, trustworthiness was ensured by adopting the criteria for ensuring trustworthiness through respondent validation [32].

E. Data Analysis

Descriptive statistics such as mean and standard deviation and inferential statistics such as multiple regression and stepwise regression were used for the research questions 1, 2 and 3 respectively. The qualitative data was analysed through content analysis [33].

V. RESULTS

A. Demographic Characteristics of the Respondents

The demographic characteristics of the pupils were examined, and the results are shown in Table I.

B. Research Question 1: What is the Level of Adoption of LMS by Students of the University of Education, Winneba?

Research question one investigated the level of adoption of the University of Education, Winneba’s Learning Management System as an online learning platform by its students. In this study, mean and standard deviation were calculated to determine the perceived level of LMS adoption such that mean≤2.50 indicated/perceived as below average, mean of 2.50 but <3.50 showed average, and mean≥3.50 indicated above average. The analysis of the results is shown in Table II.

The findings in Table II showed that students of the University of Education, Winneba had varied levels of adoption relative to the scales/domains of adoption. However, the results indicated that the students rated highest to the view that LMS enable them to accomplish the task more quickly
(M=3.92, SD=0.64), followed by LMS being clearer and understandable (M=3.81, SD=0.51), LMS having a humanized operating interface (M=3.77, SD=1.16), LMS being convenient to use (M=3.75, SD=0.99), easy to learn (M=3.51, SD=0.92), the use of LMS being a wise idea (M=3.25, SD=1.06), students liking web-based learning (M=3.20, SD=1.05), having a positive attitude towards e-learning (M=3.11, SD=0.78), confident using LMS (M=3.07, SD=1.32) while their intent to increase their usage of LMS (M=3.01, SD=1.05) was the least adoption level as perceived by the students. Based on the criteria it could be realized that the level of adoption relative to the scales used were all average and above. Overall, the level of adoption by students of the University of Education, Winneba was average. The interview with the students further corroborated their submissions in the quantitative dimension of the study. For instance, participant A said:

I accept the fact that learning through LMS is a brilliant innovation. I still feel I lack certain skills to navigate the platform fully for learning purposes (Marting, a Vocational Educational student at UEW).

Participant C concurred:

Even though I use LMS for my classroom activities, I sometimes struggle to gain full control of the activities I want to perform on the LMS (Amponsah, a Chemistry Education student at UEW).

Participant E reiterated:

I agree that the LMS has an attractive interface that makes it easy to surf. I only use it when lecturers have given us assignments and other materials to peruse. On a scale of 1-10, I rate the extent to which I use the LMS on 5 (Ampofoa, a Mathematics Education student, UEW).

Participant G intimated:

I use the LMS somehow for my assignment and other tasks due to its asynchronous nature. It is more flexible as compared to the traditional classroom settings where students miss a lot of the things said by lecturers during teaching and learning (Participant G, a French Education student at UEW).

Inferring from the views of the students from the questionnaire as corroborated through the interview, the student's level of adoption of the LMS is moderate. This can be deduced from such expressions as: “lack certain skills to fully”, “sometimes struggle to gain control”, “I rate myself on 5 on a scale of 1-10”, “I use the LMS somehow” of the students respectively. This implies that students might prefer other means of learning if allowed to select from other alternatives.

C. Research Question Two - What are the Determinants of Students’ Level of Adoption of the LMS in the University of Education, Winneba in an Era of COVID-19?

Research question 2 sought to investigate the factors the determinants students’ level of adoption of LMS. Factors such as perceived usefulness, perceived ease of use, attitude and self-efficacy were used. Multiple regression was employed, and the results are presented in Table III.

The multiple regression results in Table III revealed that factors such as perceived usefulness, perceived ease of use, attitude and self-efficacy collectively contributed 42.3% to students’ level of adoption of LMS which was considered to be statistically significant [F (4, 3192) = 32.530, p=0.000]. This result implied that other factors not included in this study were responsible for 57.7% influence on the students’ level of adoption of LMS. Based on these results, it could be concluded that together, these factors were good predictors of students’ level of adoption of the University of Education Winneba’s LMS. The study further examined the influence of each predictor on the students’ level of adoption, and the results are shown in Table IV.

| TABLE III: MODEL SUMMARY OF MULTIPLE REGRESSION ON STUDENTS LEVEL OF ADOPTION OF LMS |
|--------------------|---------|---------|----------|------|----------|-------------|----------|
| Model | R | R2 | Adjusted R2 | Std. Error of the Estimate | R2 Change | F Change | df1 | df2 | Sig. F Change |
|--------------------|---------|---------|----------|------|----------|-------------|----------|
| 1 | 0.630 | 0.423 | 0.389 | 0.491 | 0.423 | 32.530 | 4 | 3192 | 0.000 |

a. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use, Attitude, Self-Efficacy.  
b. Dependent Variable: Level of Adoption of LMS.

d. Research Question Two revealed that factors such as perceived usefulness, perceived ease of use, attitude and self-efficacy collectively contributed 42.3% to students’ level of adoption of LMS which was considered to be statistically significant [F (4, 3192) = 32.530, p=0.000]. This result implied that other factors not included in this study were responsible for 57.7% influence on the students’ level of adoption of LMS. Based on these results, it could be concluded that together, these factors were good predictors of students’ level of adoption of the University of Education Winneba’s LMS. The study further examined the influence of each predictor on the students’ level of adoption, and the results are shown in Table IV.

| TABLE IV: MULTIPLE REGRESSION ON THE PREDICTORS OF STUDENTS LEVEL OF ADOPTION OF LMS |
|--------------------|---------|---------|----------|------|----------|-------------|----------|
| Model | Unstandardized Coefficients | Standardized Coefficients | Beta | t | sig. |
|--------------------|---------|---------|----------|------|----------|-------------|----------|
| 1 | (Constant) | 3.620 | | | | | |
| Perceived Usefulness | -0.020 | 0.025 | 0.17 | -0.795 | 0.20 |
| Perceived Ease of Use | 0.121 | 0.025 | 0.102 | 4.790 | 0.00 |
| Attitude | -0.038 | 0.021 | 0.034 | -1.828 | 0.03 |
| Self-Efficacy | 0.038 | 0.025 | 0.051 | 1.503 | 0.00 |

Source: Online Field Survey, 2020.

The results in Table IV indicates that all the four factors, perceived usefulness (β=-0.017, t=-0.795, p<0.05), perceived ease of use (β=0.102, t=4.790, p<0.05), attitude (β=-0.034, t=-1.828, p<0.05), and self-efficacy (β=0.031, t=1.503, p<0.05) individually contributed significantly to the level of adoption of UEW Learning Management System (LMS). This finding was equally supported by the interview with the students who participated in the study. For example, Participant E said:

I wish I could use the LMS more often, but I normally struggle to perform certain basic tasks due to my limited skills when it comes to the use of computers for such purposes. I normally have to rely on the help and support from my colleagues (Alima, a Marketing student at UEW).

Participant G also mentioned:

You see, using the LMS is not so pleasing as compared to the software that we are used to. Sometimes, you can sit behind the laptop throughout the internet, and you might not find your way through. Even some of our lecturers are complaining that they have not received the assignments that...
were submitted via the platform. Honestly, I would not recommend the LMS for teaching and learning purposes in my entire stay at the University (Talata, a Social Studies student at UEW).

Participant H intimated:

You see, it is not easy for some of us to be using the LMS. This is my first time using such platforms and because we did not receive any intensive training before it was unleashed on us, I often find myself struggling to use it (Carlos, a Special Education student at UEW).

Participant A also concurred:

I do not fancy using the LMS for learning. Sometimes you will be writing exams and before you realize the internet has disconnected. The quantum of items that can be submitted online makes it unfriendly for some of us in the sciences where our practicals have to be recorded and submitted (Amancus, Home Economics Education student at UEW).

The stepwise regression results in Table V revealed that in Step 1, Age contributed 24.2% to students' level of LMS adoption which was found to be statistically significant (β=0.621, t=18.563, p=0.000) at 0.05 alpha level. The inclusion of Faculty in Step 2 accounted for 28.9% in students' level of LMS adoption, reaching statistical significance (β=0.548, t=15.324 p=0.000) at 0.05 alpha level, indicating that Faculty of students made an additional significant contribution of about 4.7% to their adoption of LMS. Finally, the introduction of students' level of ICT skills in Step 3 resulted in a 48.9% variance in students' LMS adoption that reached statistical significance (β=0.428, t=12.548 p=0.000), thus showing a significant contribution of 20% to the variance in students LMS adoption to the previous step. This showed that students' level of ICT skills significantly added 20% of the variance in their LMS adoption. It could be concluded that students' Level of ICT skills, Age and their Faculty would significantly bolster their level of adoption of LMS.

E. Discussion

The results have shown that the level of adoption of the LMS among UEW students was moderate. This implies that the students moderately find LMS easy to learn and remain positive about the use of LMS for teaching and learning. Besides, the students remain moderate in using LMS for teaching and learning purpose. This means that there is a certain degree of acceptance of the LMS among the students of UEW. In this era, the adoption of technological infrastructure such as the LMS for teaching and learning has become a requirement for delivering quality education [25]. Its introduction in educational institutions does not guarantee acceptance among the students; it however provides a glimpse of the intentions of the students to use the LMS. The finding of this study is consistent with the findings of [36] which juxtaposed that the level of adoption of LMS was moderate.

Again, the study further established that Perceived Usefulness, Perceived Ease of Use and Attitude towards the LMS were significant predictors of students' adoption of the LMS even amid the COVID-19 pandemic. This means that the moderate use of the LMS is first dependent on how useful the students find the LMS. If the students consider the LMS as a platform that can enhance their learning purposes, they are likely to stick to the platform as compared to platforms that might not enhance their learning purposes [27]. The use of the LMS allows students to undertake tasks within the shortest time as compared to the traditional platforms that teachers are inclined to [37]. Besides, the asynchronous nature of the LMS platforms allows the students to revisit the lessons after the instruction has ended. Such an approach would allow students to enhance their academic prowess by revising their academic tasks whenever they wish. It, therefore, presupposes that the students might consider the UEW LMS as easy to use with the application of less effort albeit at a moderate level. Reference [38] maintain that LMS possesses features such as an enhanced system to support course management, tracking progress, ubiquitous access, and social connectivity among others that make it robust for students than other learning platforms. This corroborates the findings of [39] who found that performance expectancy, effort expectancy and institutional support positively determined students’ intention to use the LMS for teaching and learning purposes. Similarly, the results confirm that of [18] that the key determinants of LMS adoption and adoption intention include in tertiary institutions in Sub-Saharan Africa are user Attitude, Perceived Usefulness, Performance Expectancy, Perceived Ease of Use, Social Influence Expectancy and Self-efficacy (S).

VI. CONCLUSIONS AND IMPLICATION FOR POLICY AND PRACTICE

It was concluded from the results of the study, therefore, that the adoption of LMS would have been low had it not been the outbreak of the COVID-19 that has left students with no

| TABLE V: STEPWISE REGRESSION RESULTS ON STUDENT’S DEMOGRAPHIC VARIABLES AND LMS ADOPTION |
|----------------------------------|--------|--------|--------|--------|-------|
| Steps | Predictors | R    | R²    | Adj. R² | R²Δ   | B     | T     | Sig.  |
|-------|-------------|------|-------|---------|-------|-------|-------|-------|
| 1     | Age         | 0.442| 0.242 | 0.225   | 0.242 | 0.621 | 18.563| 0.000 |
| 2     | Age, Faculty| 0.563| 0.289 | 0.268   | 0.289 | 0.548 | 15.324| 0.000 |
| 3     | Age, Faculty, Level of Students ICT Skills | 0.620| 0.489 | 0.473   | 0.489 | 0.428 | 12.548| 0.000 |

Source: Online Field Survey, 2020.

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option other than to use the LMS. Until students develop a positive attitude and perceptions towards LMS, its adoption in UEW would remain between moderate and low. Furthermore, the significance of demographic characteristics of the students should not be downplayed in the design and implementation of technology-oriented platforms for students learning in UEW. The study recommends that the Management of UEW LMS continue to conduct pragmatic and purposeful seminars and workshops to educate students about the use of the LMS and the benefits they stand to gain in using the LMS for their academic activities. Such seminars and workshops should target the mind and skillset of the students. Again, management needs to consider the ages, faculty and level of ICT skills of the students in the implementation of subsequent online platforms for effective and efficient teaching and learning. Lastly, in a more pragmatic way, courses with ICT content and context which are taught in the University should as a matter of priority incorporate both theory and practical use of online learning systems to enhance students’ use of online portals for learning purposes.

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