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Full Length Research

Attitudinal, normative and control beliefs underlying graduate students' adoption of the learning management system for learning at the University of Education, Winneba, Ghana

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ABSTRACT: The purpose of the study was to use the Theory of Planned Behaviour (TPB) to identify the underlying beliefs that impact online learning behaviours of graduate students at the Faculty of Educational Studies, University of Education, Winneba, Ghana following the sudden outbreak of COVID-19, which led to national lockdowns and closure of schools. The article reports attitudinal, normative and control beliefs of graduate students to accept learning management system (LMS) for online learning and also establishes which of the three beliefs influenced their readiness for online learning. One hundred and sixty-four graduate students of the Faculty of Educational Studies, University of Education, Winneba, completed questionnaire hosted on Google Form. Data were analysed using frequencies, percentages, means, standard deviations, MANOVA, Pearson's moment correlation and ordinary least squares multiple regression. The findings revealed that perceived usefulness of the LMS for online learning and perceived lecturer readiness to use LMS as well as students' learning autonomy combined to influence students' willingness to accept LMS for online learning. The study recommended that the university authority should intensify ICT training and usage among students and staff to sustain the use of LMS for online teaching and learning. The researchers should also extend the study to the undergraduate students who constitute the largest proportion of student population of the university.

Keywords: Attitudinal, control beliefs, e-learning, normative, Winneba.

INTRODUCTION

The sudden outbreak of coronavirus (COVID-19) as well as its swift and devastating impact on humanity in 2019 resulted in world-wide lockdown and closure of all institutions for learning, including tertiary education institutions. The impact of the closure of tertiary education institutions was immediate and huge (Marinoni et al., 2020). The United Nations Educational Scientific and Cultural Organization [UNESCO] (2020) estimated that the education of about 1.5 billion children and youth was disrupted due to the closure of schools in 2020. In Africa, records show that the COVID-19 pandemic disrupted the studies of more than 9.8 million students in higher education institutions (Tamrat and Teferra, 2020). While in Ghana, records show that COVID-19 affected 443,693 students at the tertiary education level (Dampson, 2020).

In order to minimize the disruption of academic calendar and compensate for the loss of instructional time, governments in technological advanced countries such Australia, Germany, US, China and the UK adopted distance learning through e-learning platforms such as

Moodle, Learning Managemeent System (LMS), and cloud systems and created access to e-content and repository for learners through mobile devices (Nicola et al., 2020 as cited in Dampson, 2020; Tamrat and Teferra, 2020; World Bank Group, 2020). In Ghana, as a means to control the spread of COVID-19 and its associated high death rates, universities and other tertiary institutions which were closed down at the onset of the virus were only allowed to reopen and adopt online using different e-learning platforms. The adoption of e-learning was based on the assumption that students at the tertiary level possess basic digital and technological knowledge and competence, have accesss to internet connectivity and can meet the cost of data bundles (Bedford, et al., 2020; Ficus 2020; Karp and McGowan, 2020).

E-learning, according to Koontz and Weihrich (2004), is a set of learning methods and strategies that employ global information networks to link and share lessons and study topics in real time between learners and teachers. Guragain (2016) added that e-learning has become essential because it is more convenient for students, lowers costs, provides up-to-date learning materials, learning flexibility, embedded with scalable e-learning systems, and gives students a greater degree of freedom for learning. Unlike high income countries where internet infrastructure are well developed and therefore reliable, in Ghana, many tertiary education institutions including the University of Education, Winneba are still developing their internet architecture. Consequently, both students and faculty experience intermittent disruptions in connectivity during peak hours, which are likely to impact negatively on students' readiness to adopt any form of online learning.

Literature talks about two types of e-learning namely, *asynchronous e-learning* and *Synchronous e-learning* (Chourishi, et al., 2011). *Asynchronous e-learning*, which is frequently aided by media such as e-mail and discussion boards, is used to sustain interaction among learners and facilitators when participants cannot be online at the same time. Video conferencing and chats, on the other hand, are frequently used in conjunction with *synchronous e-learning*. One of the popular *synchronous e-learning* platforms that fits the set of requirements for designing and structuring distant learning courses is the Learning Management Systems (LMS) also known as Moodle (Chourishi et al., 2011; Lopes, 2014). The researchers argue that since the internet architecture of the country and its educational institutions are not well developed, staff and students would have to rely more on the Asynchronous e-learning.

In order to bring the 2019/2020 academic year to a successful ending, the University of Education, Winneba was one of the few tertiary institutions in Ghana, which adopted e-learning through the use of LMS. It is important to explain that the university had since 2007 used moodle, which is a form of online teaching and learning model for its distance and few other regular programmes. For instance, the Department of Special Education of the University from 2008 to 2010 offered a postgraduate programme in Educational Audiology via moodle. To ensure successful adoption of that mode of delivery, the Department of Special Education trained the staff in the use of the Moodle. Also, basic technological knowledge and competence were prerequisite requirements to students who enrolled on that online programme. However, the use of the Moodle was not expanded to other programmes or sustained by the Department of Special Education.

Learning management systems (LMS) automate many of the processes linked with learning, as they are created to make online learning easier, and as noted by Reid (2019), instructors are embracing LMS platform for knowledge sharing and means of educating and ensuring learners complete their college degrees, regardless of their geographical locations. LMS are web-based software platforms that automate the administration, organization, delivery, and reporting of educational contents and student results. LMS provide flexibility in the form of self-study and extension activities, and offer the sort of learning activities available in achievement monitoring (Mahoney and Cameron, 2008). As course management platforms, LMS enable instructors to plan, build, and prepare their classroom to give online education to their students (Reid, 2019). Furthermore, as compared to other traditional ways, these online learning facilities make communication between lecturers and students more efficient (Lopes, 2014) as they ensure sustained communication between lecturers and students; more especially communication of students' progress in learning.

Santiago et al. (2020) posit that globally, colleges and universities are now adopting LMS in order to make learning more accessible to students. LMS allow students to engage with e-learning materials and their lecturers, thereby ensuring continuinty of academic activities (Santiago et al., 2020). LMS can help improve overall student performance (Magalhães et al., 2020), since students can now study off-campus without the requirement for face-to-face or lecturer–student interaction (Masud, 2016). By their nature, LMS speed up the learning process (Denan et al., 2020) and logically increase students on task behaviour. The researchers argue that the graduate students of the university would only reap the enumerated benefits if only they could afford the cost of data bundles.

Studies conducted in many universities to establish the importance of learners' attitudes while using LMS in the teaching and learning process, have revealed that attitude is the most difficult obstacle to overcome in the deployment of LMS (Alghamdi and Bayaga, 2016). In India for example, higher academic institutions implemented the LMS system to fully utilize 700 virtual technologies (Gulzar and Anny Leema, 2016). Because more college students have their own computer devices, they may be ready to

use LMS sooner than their pre-tertiary counterparts (Cheon, et al., 2012). Since adopted LMS for online teaching and learning in March 2020, the University of Education, Winneba has not conducted any study among studnets to understand their attitudes or readiness to the online teaching and learning.

This current study was delimited to the Faculty of Educational Studies (FES), which is one of the faculties of the University with six academic departments, in order to explore students' readiness and attitudes towards the use of LMS for learning and teaching. It is important to state that all first year graduate students of the University take a compulsory semester course in ICT known as *Computer Applications in Education* (EDI 802). This course is intented to build on students' experiences by providing additonal hands-on computer activities in application programmes including the use of educational software in teaching and learning (UEW, 2020). Also, graduate students at the University of Education, Winneba are teachers who have taught for three or more years and therefore can afford some of the ITC tools such as laptop, adriod phones and tablets, as well as the means to purchase data bundles for online learning. Graduate students should therefore demonstrate readiness to migrate from face-to-face to e-learning. Thus, understanding the beliefs of graduate students about the importance of LMS is vital for online learning to flourish in the University of Education, Winneba.

The purpose of the study was to use the Theory of Planned Behaviour (TPB) to identify the underlying beliefs that impact online learning behaviours, specifically, those beliefs that encourage online learning among graduate students at the Faculty of Educational Studies, University of Education, Winneba (Ghana). The study set out to address the following questions:

1. What are the attitudinal beliefs (perceived usefulness and ease of use) among graduate students of the FES of the University of Education, Winneba about LMS for online leaning?
2. What normative beliefs (perceived instructor and student readiness) motivate graduate students of FES to adopt the LMS for online learning?
3. What control beliefs (perceived self-efficacy and learning autonomy) hinder the graduate students of FES from adopting LMS for online learning?
4. Which of the beliefs influence the readiness of graduate students of FES to use LMS for e-learning?

LITERATURE REVIEW

Theory of planned behaviour

Many studies have been conducted to determine the factors that influence people's decisions to engage in e-learning in international settings (Premkumar et al., 2008; Cheon et al., 2012; White and Hyde, 2013). The Theory of Planned Behaviour is used in estimating behaviour and intentions of individuals' attitudes, and includes situational considerations via a study of norms and control perceptions (Ajzen, 1991). The Theory of Planned Behaviour (TPB) is essentially an expanded version of the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). It argues that an individual's behaviour is directly influenced by their intention, which is a function of their attitude, subjective norm, and behavioural control (Ajzen, 1991). That is, a person's attitude toward their behaviour is either a positive or negative feeling that the individual has about the performance of a specific behaviour. Research indicates that subjective norm is explained as an individual's perception of societal pressure. Perceived behaviour control is then one's perception of the ease or difficulty of carrying out a specific behaviour (Cheon et al., 2012; Raza, et al., 2018). Researchers can determine the beliefs that distinguish persons who undertake a specific behaviour from those who do not by assessing belief-based determinants of attitude, subjective norms, and perceived behaviour control. These beliefs help to better comprehend a variety of behaviours, including e-learning behaviour (White and Hyde, 2013). The underlying belief systems (attitudinal, normative, and control beliefs) reflect each of these three determinants of behavioural intention (Premkumar et al., 2008).

Attitudinal beliefs towards attitude

The degree to which one has a positive or negative view regarding the performance of a given behaviour is referred to as attitude. Previous research has found that attitude is a substantial predictor of intention (Ajzen, 1991; Taylor and Todd, 1995). Attitude is also influenced by attitudinal beliefs. To measure attitude in this study, perceived ease of use and percceived usefulness, which are technology acceptance model variables were integrated. According to the technology acceptance model, there are causal linkages between perceived ease of use, perceived usefulness, attitude, and intention to use a system (Davis, 1989). Many studies have been conducted in which perceived usefulness and perceived ease of use have been used to determine an individual's intention to adopt an information system in a learning environment (Premkumar et al., 2008; Cheon et al., 2012; Raza et al., 2018). Perceived usefulness refers to the level to which an individual's productivity increases by employing a particular system or technology (Hu and O'Brien, 2017; Jeffrey, 2015; Mugo et al., 2017). Perceived ease of use, on the other hand, refers to the degree to which a system or technology may be used with ease from an individual's perspective (Davis, 1989; Venkatesh, 2000). Both

perceived usefulness and perceived ease of use have an impact on a person's attitude toward the intention to use technology (Weng, et al., 2018). It is essentially an individual's perspective of the effort required when using technology (Davis, 1989). As indicated earlier, the study exmined the perceived usefulness and perceived ease of use of LMS by graduate students of UEW.

Normative beliefs toward subjective norm

The subjective norm deals with an individual's perception of the social context in which the behaviour occurs. According to Venkatesh and Davis (2000), an individual's intention is determined by the perceptions of those who are important to him or her, and this is how subjective norm and behavioural intentions are linked. Subjective norm is influenced by existing normative beliefs that explain other people's expectations as a crucial component in behavioural intention (Ajzen, 1991). Instructors and peer students are major referent sets in the setting of higher education, according to prior studies (Taylor and Todd, 1995). As a result, in this study, perceived lecturers' and students' normative beliefs are regarded to be the predecessors of subjective norm. Technology readiness, according to Parasuraman (2000), is the inclination to adapt and use new technologies in order to fullfill personal and professional goals. In this study, technology readiness refers to graduate students' readiness as well as the perceived readiness of faculty to adopt the LMS for teaching and learning. Students' and lecturers' readiness to accept and use technology has been found to play a key role in the acceptance and adoption of e-learning in previous studies (Premkumar et al., 2008; Cheon et al., 2012; Raza et al., 2018).

Control beliefs towards perceived behavioural control

Behavioural control is concerned with an individual's perception of the management of a given behaviour, and this perception is linked to the purpose to perform that behaviour (Ajzen, 1991). Some researchers have concluded that a person's confidence in their ability to overcome any expected obstacles in adopting a behaviour increases their behavioural control (Ajzen, 1987; Raza et al., 2018). Behavioural control is made up of two parts: self-efficacy and controllability. Self-efficacy is described as a person's confidence in their ability to carry out a specific conduct, and it influences behaviour (Ajzen, 1991). Self-efficacy is a concept that encompasses an individual's personal capability and passion for completing a task (Bandura, 1997). Raza et al. (2018) posit that when people think about becoming proficient and expert at an activity, they are more likely to have a stronger desire to perform that task or skill. Self-efficacy has a substantial impact on the adoption of technology as well as the decision to use it (Cheon et al., 2012) . Learning autonomy is also a precursor for behavioural control that was used in this study. Learning autonomy refers to the degree to which students can control their own learning (Cheon et al., 2012; Raza et al., 2018). Raza et al. (2000) reported that, autonomy has a key impact on system adoption. As a result, learning autonomy might be seen as a necessary prelude to behavioural control.

METHODOLOGY

The study was a descriptive cross-sectional survey design, which used self-completed questionnaire to collect data from first-year graduate students at the Faculty of Educational Studies (FES), University of Education, Winneba, Ghana, to make inferences regarding attitudinal, normative and control beliefs underlying graduate students' perception of the LMS. The population inlcuded all first-year graduate students of FES. Graduate students of FES were chosen because the Faculty has the highest number of registered regular graduate students in the University. For the 2020/2021 academic year, 284 fresh graduate students registered in the six Departments of the Faculty. The participants were made up of 56 Doctoral, and 228 Master of Philosophy students. Graduate students in Sandwich programmes in the Faculty were excluded because as at the time of study the first semester of the Sandwich programme had not started due to the COVID-19 pandemic. Census of the regular graduate students in the Faculty of Educational Studies was carried out using the student's WhatsApp platforms to invite them to complete a 65-item electronic survey hosted on Google Form. Since the questionnaire was hosted online the entire first year regular graduate students of the Faculty were targeted to participate in the study (VanderStoep and Johnson, 2009). After the overview, a space was provided for participants to declare their consent, and then proceed to answer the items regarding their attitudinal, normative and control beliefs about LMS for online teaching and learning.

The study did not include staff or lecturers in the Fcaulty, it focused exclusively on regular fresh students. Over a period of two months, that is, from January to March 2021, one hundred and sixty-four (164) completed questionnaires, which were retrieved from the Google Form. A response rate of 57.7 percent, which was aceptable for internal survey, was achieved. Baruch and Holtom (2008) posited that the minimum response rate for a survey employing primary data from individuals is approximately 53%. Table 1, shows the break down of respondents by departments.

Instrument

For data collection, as suggested by Walford (2004), the

Table 1. Respondents by Department.

Department	Respondents (%)
Special Education	29.30%
Early Childhood Education	16.50%
Basic Education	13.40%
Educational Foundations	9.80%
Counseling and Psychology	13.40%
Educational Administration and Management	17.70%

Data analysis, 2021.

Table 2. Tolerance of the predictor variables.

Independent variables	VIF	Tolerance
Perceived Usefulness (PU)	2.68	0.37
Learner Autonomy (LA)	1.81	0.55
Perceived Instructor Readiness (IR)	2.92	0.34

Data analysis (2021).

researchers developed a validated questionnaire. The context, action, and time, the belief variables were examined at the same level of specificity (Fishbein and Ajzen, 1975). Attitude, normative, and control beliefs components of the questionnaire were created in accordance with recommendations by Ajzen and Fishbein (1980). The instrument was constructed by adopting and modifying the attitudinal (perceived usfulness and perceived ease of use), normative (perceived instructors' and students' readiness) and control belief (learning autonomy and perceived self-efficacy) constructs by Cheon et al. (2012). Eighteen variables were identified and operationalized on a seven-point Likert type scale ranging from 1 (extremely low) to 7 (extremely high) for the survey. Respondents indicated the likelihood that six outcomes, both perceived usefulness and perceived ease of use, would influence the adoption of the LMS for learning to assess attitudinal beliefs. Respondents' normative beliefs included the likelihood that they and their lecturers believe the LMS should be used for teaching and learning. In terms of control beliefs, respondents reported that their perceived self-efficacy and learning autonomy would influence their participation in online classes. A complete list of beliefs can be found in Table 2. The instrument was pre-tested with ten final year undergraduate students of Department of Special Education to determine its internal consistency. Final year students of the university had in their first year been exposed to a semester course in ICT integration in education, and were also participating in the online learning. Cronbach's alpha was calculated for the constructs to determine the instrument's reliability, which was more than 0.7, and therefore acceptable for data collection (Nunnally, 1978). The variables in the validated and reliable instrument were then uploaded to a Google Form and the link shared with the students on their respective class WhatsApp platforms.

Data processing and analysis

The data was coded and loaded into IBM SPSS to examine the attitudinal, normative and control beliefs of the graduate students to adopt LMS for learning instruction at the Faculty of Educational Studies of the University of Education, Winneba. The data were analyzed using frequencies, percentages, means, standard deviations, one-way multivariate analysis of variance (MANOVA), Pearson's Moment Correlation and Ordinary Least Squares (OLS) Regression. Preliminary analysis revealed that there were no univariate outliers (Pallant, 2016). The Mahalonobis distance statistics in IBM SPSS was used to assess multivariate outliers among the constructs (Tabachnick and Fidell, 2013). The results indicated that there were no multivariate outliers. The Chi-Square Table's critical value of 20.52 for 5 independent variables was greater than the study's highest Mahalanobis distance (15.14), indicating that the assumption of multivariate outliers was not violated (Pallant, 2016).

Multi-collinearity of the data set was also computed to examine the variance inflation factors (VIFs) and Tolerance of the predictor variables used in the OLS regression. According to Tabachnick and Fidell (2013), Variance Inflation Factor (VIF) indicate the extent to which the variance of the coefficient estimate is inflated by multi-collinearity. Hence, any predictor variable with VIF above 10 shows the presence of multi-collinearity. The VIF values of the predictor variables were (perceived usefulness = 2.68, learning authonomy = 1.81, perceived instructor readiness = 2.92) which were all less than the threshold value of 10 (Table 2). Pallant (2016) also posited that Tolerance (Xk) values that are very low (less than 0.10) shows that the predictor variables have high correlation with each other in the model which indicate that multi-collinearity may be a treat, therefore one of the highly inter-correlating predictor variables must be removed (Hair Jr et al., 2017). The corresponding Tolerance of the predictor variables were also greater than the cut-off point of 0.10 (Table 2). The VIF and Tolerance values showed that the OLS regression model was not affected by multi-collinearity (Hair Jr et al., 2017).

RESULTS

Background information of the graduate students

The respondents were made up of 102(62.2%) males and 62(37.8%) females. The mean age was 34.50 years (σ = 7.53, range = 25 – 50 years). Majority (53.7%) of the resondents were married. The mean years of teaching

Table 3. Background information of respondents.

Background Information of graduate students	Frequency	Percentage
Sex		
Males	102	62.20
Females	62	37.80
Age (μ = 34.50, σ = 7.53)		
25 – 35	90	54.90
36 – 45	56	34.10
More than 46	18	11.00
Marital status		
Married	88	53.66
Single	76	46.34
Years of teaching yxperience (μ = 8.33, σ = 8.20)		
No experience	46	28.00
1 – 10	60	36.60
11 – 20	40	24.40
More than 21	18	11.00
Type of graduate student		
MPhil student	146	89.00
PhD student	18	11.00
Departments		
Special Education	48	29.30
Educational Administration and Management	29	17.70
Early Childhood Education	27	16.50
Basic Education	22	13.40
Counselling Psychology	22	13.40
Educational Foundations	16	9.80

Source: Field data, 2021.

experience was 8 years (σ = 8.20); however, 28% of the respondents did not have any teaching experience. Also, majority (89%) of the respondents were MPhil students whilst the remaining 11% were PhD students.

Again, Table 3 shows that the majority of the respondents were students who were offering Special Education (29.3%), while the least proportion of respondents came from the Department of Educational Foundations. Also, the respondents from the Department of Special Education were more than those from Counselling Psychology and Basic Education put together.

Attitudinal beliefs of graduate students

Perceived usefulness was operationalized as the level to which the productivity of a graduate student increases by employing the LMS for e-learning (Hu and O'Brien, 2017; Jeffrey, 2015; Mugo et al., 2017). Table 4 shows respondents attitudinal beliefs relative to online learning and teaching via LMS.

Table 4 reveals that the gradute students in the study perceived LMS for e-learning to be 'highly useful' (overall μ = 4.99, σ = 1.97). Specifically, the students indicated that they believe LMS was useful for learning (μ = 5.17, σ = 1.99), would improve their ability to learn (μ = 4.95, σ = 2.02) and would allow them to perform task quickly (μ = 4.84, σ = 2.12). As explained elsewhere, perceived ease of use denotes the degree to which the students felt they could use the LMS (Davis, 1989; Venkatesh, 2000). The analysis, also, indicates that the students percieved the ease of use of LMS was 'moderate' (overall μ = 4.00, σ = 2.02). The students stated that it was 'moderately easy' for them to access course materials from the LMS platform (μ

Table 4. Attitudinal, normative and control beliefs of graduate students.

Variables	μ	σ
Perceived usefulness of the LMS		
I believe that the LMS platform would be useful for my learning	5.17	1.99
I believe that using the LMS platform would improve my ability to learn	4.95	2.02
I believe that the LMS platform would allow me to get my work done more quickly	4.84	2.12
Overall Mean	4.99	1.98
Perceived ease of use of the LMS		
I believe it would be easy to access course material from LMS platform	4.18	2.10
I believe that the LMS platform would be easy to use	3.96	2.11
I believe that the LMS platform is easy to operate	3.91	2.09
Overall Mean	4.00	2.02
Students readiness to use the LMS		
I think other students believe that LMS platform could be a useful educational tool for their coursework	4.80	1.92
I think other students possess adequate technical skills to use LMS platform for their coursework	4.77	1.82
I think other students would be in favour of utilizing LMS platform for their coursework	4.56	1.91
Overall Mean	4.71	1.73
Perceived instructor readiness to use the LMS		
I think lecturers believe that the LMS platform could be a useful educational tool in their courses	5.12	2.06
I think lecturers would be in favor of utilizing the LMS platform for their courses	5.02	1.97
I think lecturers possess adequate technical skills to use LMS platform in their teaching	4.49	2.08
Overall Mean	4.87	1.81
Learning autonomy to use the LMS		
I would have more opportunities to gain knowledge in my coursework from the LMS platform	4.40	1.98
I would be able to control the pace of learning in my classes from LMS platform	4.39	1.91
I would be able to continuously access coursework materials from the LMS platform	4.22	1.98
Overall Mean	4.34	1.85
Perceived self-efficacy of using the LMS		
I would be comfortable to use the LMS platform in my courses	4.18	2.10
I am confident about using the LMS platform for my courses	4.05	2.14
Using the LMS platform for my courses would not be challenge me	3.80	2.07
Overall Mean	4.01	1.92

Measns were calculated from a scale of 1 = Extremely low, 2 = Very low, 3 = Low, 4 = Moderately high, 5 = High, 6 = Very high and 7 = Extremely high.
Source: Field data, 2021.

= 4.18, σ = 2.10), because the platform was easy to use (μ = 3.96, σ = 2.11) and operate (μ = 3.91, σ = 2.09).

The researchers used one-way MANOVA to compute the graduate students' attitudinal beliefs according to their departments within the Faculty of Educational Studies. The Box's Test of Equality of Covariance Matrices was checked for the assumption of homogeneity of covariance across the departments by ultizing the $p < 0.001$ criteria. The results showed that Box's M (27.29) was not significant, p (0.035) > p (0.001), signifying that there were no significant differences between the covariance matrices of the first year regular graduate students of the six departments within the faculty. Therefore, the assumption was not violated and Wilk's Lambda was an appropriate test to use. Using an alpha level of 0.05, it was observed that the test was not significant, Wilk's Lambda = 0.91, $F(10, 314) = 1.44$, $p = 0.16$, multivariate eta = 0.044. Indicating that the first year regular graduate students of the six departments of the Faculty of Educational Studies of the University of Education, Winneba did not significantly differ in their attitudinal beliefs about the usefulness and ease of use of the LMS for e-learning.

Normative beliefs of graduate students

To determine the normative beliefs of the graduate students toward subjective norm, the perceived student and lecturer readiness for adopting the LMS for learning was assessed. As shown in Table 4, the graduate students were 'highly' ready (overall μ = 4.71, σ = 1.73) to adopt the LMS for learning because the students believed that the LMS platform was a useful educational tool (μ = 4.80, σ = 1.92), they also possessed adequate technical skills to use the platform (μ = 4.77, σ = 1.82) and were in favour of utilizing the platform (μ = 4.56, σ = 1.91) for their coursework. Also, the first year regular graduate students perceived their instructors to be 'highly' ready to use the LMS for teaching (overall μ = 4.87, σ = 1.81). The students not only perceived that their lecturers believe the LMS platform was a useful educational tool (μ = 5.12, σ = 2.06), and were in favour of utilizing the platform (μ = 5.02, σ = 1.97) but the students also believed their lecturers possessed adequate technical skills to use LMS platform (μ = 4.49, σ = 2.08) in teaching.

One-way MANOVA was executed in relation to research question two which dealt with the differences in the perception of the first year regular graduate students about their readiness and perception of their lecturers to use the LMS for learning and teaching in the university. The results showed that Box's M (32.92) was not significant, p (0.007) > p (0.001), signifying that there were no significant differences between the covariance matrices of the graduate students at the six departments. Therefore, the assumption was not violated and Wilk's Lambda was an appropriate test to use. Using an alpha level of 0.05, the test showed no significant difference, Wilk's Lambda = 0.92, F(10, 314) = 1.01, p = 0.44, multivariate eta = 0.031. The results implied that the first year regular graduate students at the six departments of the Faculty of Educational Studies of the University of Education, Winneba did not differ significantly in their normative beliefs about their readiness and perceived lecturer readiness to the use of LMS for learning and teaching.

Control beliefs of graudate students

Learning autonomy was conceptualized as the degree to which the graudate students could control their own learning activities using LMS (Cheon et al., 2012; Raza et al., 2018). Table 4 shows that the gradute students rated their ability to control their own learning activities on LMS to be 'moderately high' (overall μ = 4.34, σ = 1.85). The respondents percieved their learning autonmy to be 'moderately high' in areas such as the opportunities to gain knowledge (μ = 4.40, σ = 1.98), ability to control the pace of learning in the class (μ = 4.39, σ = 1.91) and unrestricted access to coursework materials (μ = 4.22, σ = 1.98) from the LMS platform. Self-efficacy was conceptualized to encompass the student's personal capability and passion for completing a task on the LMS (Bandura, 1997). Generally, the students had 'moderately high' perception about their capabilities and passion for completing task on the LMS (Overall μ = 4.01, σ = 1.92). The students had 'moderately high' comfortability (μ = 4.18, σ = 2.10) and confidence (μ = 4.05, σ = 2.14) about using the LMS platform. They also perceived the challenges of using the LMS platform as moderately high' (μ = 3.80, σ = 2.07).

To answer research question three about the control beliefs that differentiated graduate students of the various departments at the Faculty of Educational Studies, one-way MANOVA was computed. The results showed that Box's M (17.32) was not significant, p (0.34) > p (0.001), signifying that there are no significant differences between the covariance matrices of the graduate students at the six departments. Consequently, Wilk's Lambda was the appropriate test to use. Using an alpha level of 0.05, it was found that the test was not significant, Wilk's Lambda = 0.95, F(10, 312) = 0.86, p = 0.57, multivariate eta = 0.027. Demonstrating that graduate students at the six departments of the Faculty of Educational Studies of the University of Education, Winneba did not significantly differ in their control beliefs of their learning authonomy and self-efficacy of using of the LMS for learning.

Relationship between students' readiness to adopt the LMS for e-learning and other belief variables

Table 5 presents the results of the Pearson's Moment Correlation of the normative belief students' readiness and rest of the belief variables used in the study. Utilizing the Davis (1971) convention for interpreting the magnitude of correlation, the results showed that there was very high, positive and significant relationship between graduate students' readiness to use the LMS for e-learning and their perception of its usefulness (r = 0.83, p = 0.00) and perceived instructor readiness (r = 0.74, p = 0.00) to use the LMS for e-learning at 0.05 alpha level. Furthermore, there was subtantial, positive significant relatioship between students' readiness and their ability to control their own learning activities on the LMS, that is, learning autonomy (r = 0.64, p = 0.00). Also, the graudate students held a perceived moderate, positive significant relationship between their readiness to use the LMS, the ease of use and self-efficacy of using the LMS for e-learning at 0.05 alpha level. The results clearly show that increasing usefulness, perceived insructor readiness, learning autonomy, ease of use and self-efficacy of using the LMS positively affect the readiness of the first year regular graduate students to use the LMS for learning in the University of Education, Winneba.

Table 6 shows that the OLS regression was statistically significantly different from zero, F (160) = 362.93, p < 0.00 with composite R^2 at 0.729 at 0.05 alpha level. The

Table 5. Correlation matrix of graduate students' readiness and related variables.

Variables	SR	LA	PSE	IR	PU	PEOU
SR	1					
LA	0.637**	1				
PSE	0.426**	0.725**	1			
IR	0.744**	0.649**	0.478**	1		
PU	0.831**	0.607**	0.397**	0.781**	1	
PEOU	0.428**	0.764**	0.741**	0.495**	0.417**	1

Legend: Student Readiness (SR), Learning Autonomy (LA), Perceived Self-Eficacy (PSE) Perceived Instructors' Readiness(IR), Perceived Usefulness (PU), Perceived Aase of Use (PEOU) (Source: Data Analysis, 2021) .

Table 6. Best predictors of graduate students' readiness to adopt LMS for learning instruction.

Step of entry	R	R^2	Adj. R^2	S.E.E	R^2 Change	Stand. Beta	F Ratio	df1	df2	*P value
PU_1	0.831	0.691	0.689	0.97	0.691	0.60	362.93	1	162	0.00
LA_9	0.848	0.719	0.716	0.92	0.028	0.16	15.97	1	161	0.00
IR_{14}	0.854	0.729	0.724	0.91	0.010	0.17	5.85	1	160	0.02

Data analysis, (2021) * < 0.05.

adjusted R^2 value of 0.724 indicates that about 70% of the variance of the graduate students' readiness to adopt the LMS for e-learning is explained by perceived usefulness (R^2 = 69%), learning autonomy (R^2 = 2.8%) and instructor readiness (R^2 = 1.0%). The confidence limits of the regression coefficient of the independent variables that differed significantly from zero were computed. All together, the three independent variables accounted for approximately 72% of the variations in the readiness of the first year regular graduate students to adopt the LMS for learning at the University of Education, Winneba.

The size and direction of the relationships between the dependent and the independent variables indicate that, as the perception of the usefulness of the LMS increases by 100 unit points, the readiness of the students to use LMS increases by 60% when all other variables are held constant. Thus, perceived usefulness of the LMS for learning made the highest unique significant contribution to readiness of the graduate student to use the system. Also, as percieved instructors' readiness to use LMS increases by 100 unit points, their readiness to adopt LMS learning increases by 17% when all other predictors are held constant. Hence, perceived instructor readiness made the second most important variable to make significant contribution to the dependent variable. Again, as the ability of the students to control their learning activities increases by 100 unit points, their readiness to use LMS increases by 16% when all other variables are controlled. Therefore, learning autonomy made the third highest unique contribution to students' readiness to adopt LMS for learning.

DISCUSSIONS

The purpose of this study was to examine the attitudinal, normative and control beliefs underlying first year regular graduate students' adoption of the LMS of the University of Eduation, Winneba for learning, the interrelationships between the belief systems and the factors influencing the readiness of the students to adopt LMS. Utilizing the theory of planned behaviour, it was found that attitudinal beliefs, and perceived usefulness highly influence attitude of the students to the use of the LMS but perceived ease of use was moderate. The results agree with the findings of Cheon et al. (2012) who reported signficant effect of perceived ease of use and usefulness on college students' adoption of mobile devices for their course work. Raza et al. (2018) also found that both ease of use and usefulness significantly impact the attitudes of university students who believe that e-learning is easy and useful, hence they are more likely to use such devices in their learning process. With e-learning, the use of technology allows for a more flexible and easy learning process because platform can be accessed from anywhere with an internet connection, that is, whether at home, on campus, or on the go (Denan et al., 2020). As a result, it logical to infer that a first year regular graduate student's attitude, as well as antecedent beliefs, improve their desire to adopt the LMS of the University of Education, Winneba for learning.

The study found that behavioural control beliefs are major factors in the decision of the first year regular graduate students to adopt the LMS for learning. In spite of the fact that both antecedents (learning autonomy and

self-efficacy) had positive effect on behavioural control belief, learning autonomy had a greater impact on perceived behavioural control than self-efficacy. The results align with the the findings of Raza et al. (2018) which indicated that control beliefs, perceived self-efficacy and learning autonomy significantly improved behavioural control with learning autonomy having greater impact. Contrary to this study, Cheon et al. (2012), on the other hand, concluded that self-efficacy had stronger effect on control belief than learning autonomy. The results demonstrate that if first year regular graduate students are self-assured and provided opportunity to incorporate e-learning into their studies, the likelihood of adoting the LMS for learning will increase.

Additionally, the normative beliefs, perceived lecturer readiness, and student readiness were all investigated. The findings indicate that the first year regular graudate students feel their lecturers will be willing to adopt LMS for teaching. Students' readiness was moderate whilst perceived lecturers' willingness was high. These findings were understandable, students know that their lecturers have access to ICT tools and always undergo contiuous staff development to improve their skills in the use of technology in teaching. Besides, since it is an institutional policy, it is mandatory for leacturers to comply. The results also suggest that normative beliefs have a substantial effect on subjective norm, and the need to recognize the importance of faculty contributions, since intra-faculty interactions may aid user perceptions and adoption of LMS for teaching and learning (Raza et al., 2018).

In predicting students' readiness from the other belief systems, it was found that, perceived usefuness, learning autonomy, and instructor readiness together accounted for the graduate students' readiness to adopt the LMS of the university for learning with usefulness having the strongest effect. Also, when graduate students showed positive signs towards LMS, they exhibited a high level of acceptance and use of the platform for learning (Reid, 2019). The results agree with that of Liu et al. (2010), which concluded that perceived usefulness of mobile phones has a bigger impact on students' readiness to use mobiles devices for learning. This implies that the beneficial use of mobile phones is crucial in persuading students in higher education to adopt e-learning. Despite the controversy over how online content is evaluated, Santiago et al. (2020) posited that using an e-learning model, which also serves as a way to expedite the learning process, has excellent advantages for academic applications that can be offered through LMS, because they facilitate the administration of courses in universities and academic institutions.

Conclusions and Recommendations

The purpose of this study was to examine the attitudinal, normative and control beliefs underlying graduate students' adopting of the LMS for e-learning at the University of Education, Winneba and the beliefs predicting students' readiness to adopt the learning management system. The results suggest that attitudinal, normative and control beliefs underlying the students' use of the LMS could be explained using the lens of the theory of planned behaviour. The findings revealed that perceived usefulness of the LMS and perceived lecturer readiness to use LMS as well as students' learning autonomy combined to influence students' willingness to accept LMS. The implication is that management of the university should recognize the importance of lecturers' role in the process of successfully integrating the LMS in the e-learning programme. For the use of LMS to flourish, all students and faculty members should be given support and resources to help them integrate e-learning into their behavioural repertoire. Additionly, the management of the university should provide additional training and learning opportunities for students to become more familiar with the various features and functions of the LMS, as well as its effective usage for e-learning. The more people are aware of the usefulness and ease of use of a system, the more likely they will use it. Because students are heavily influenced by the opinions of their peers and colleagues, an encouraging environment offered by management of the university will tremendously enhance the adoption of the LMS by all students for leanring.

This study, like many other studies, has some limitations. Because the data was obtained from first-year regular graduate students of the Faculty of Educational Studies, University of Education, Winneba, the findings of this study should be generalized with caution. Also, faculty members were not directly involved in the study, so anything said about them was the perceptions of their students as indicated.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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