THE ADOPTION OF A LEARNING MANAGEMENT SYSTEM (LMS) AMONG STUDENTS AND FACULTY MEMBERS OF THE AFRICAN UNIVERSITY COLLEGE OF COMMUNICATIONS (AUCC)

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Abstract

Learning Management System (LMS) in institutions of higher learning is increasing either as a supplement to face-to-face instruction, blended instruction, or fully online course offerings. This study explored the possible differences or similarities in the perspective of both faculty and students of the African University College of Communications (AUCC) regarding the adoption of the LMS during and after the COVID-19 restrictions. In explaining how LMS is adopted or rejected, the Diffusion of Innovation Theory (DOI) and the Technology Acceptance Model (TAM) were used for this study. With the use of a qualitative research approach and case study, data was gathered from eight students and eight faculty members purposively sampled from both the Communication and Business Schools of AUCC. Data gathered was thematically analysed with the attributes of DOI and TAM. The data collected found that the participants had divergent views concerning the attributes of DOI and TAM in their adoption or rejection of the LMS. Some students preferred the new LMS because they can download it and run it on their smartphones hence having an advantage over the previously used portals that only gave them access to their grades. With compatibility, all the respondents indicated that the new LMS did not require any lifestyle change. To the faculty, it is just like an extension of the old portal previously used. For this reason, AUCC faculty are not using it effectively, and sometimes it is not used at all. The study concludes that students and faculty alike need the necessary support to maximize the use of LMS for curriculum delivery, especially during an outbreak of a pandemic like COVID-19.

Keywords: Learning Management System, COVID-19, Technology Acceptance Model, Adoption of Innovation, Curriculum Delivery

Introduction

Even though the use of technology in teaching and learning has been in existence for many years, its impetus became clear during the COVID-19 era of 2020. According to Elangovan et al., (2021), in 2020, tertiary educational institutions were left with no choice but to shut down temporarily owing to the unexpected and inadvertent lockdown triggered by the Covid-19 pandemic. Subsequently, educational institutions began to adopt online tools and virtual modes of teaching for work-from-home (Gamede et. al., 2022). As observed by Elangovan, et al., (2021), throughout the Covid-19-related lockdown, educational institutions had to adopt frequently accessible video conferencing technology available to all users, such as Google Meet, Cisco WebEx, Zoom Meetings, Microsoft Team and BlueJeans Verizon for delivering classes and online invigilating applications for assessments. Though technologies were available, orthodox approaches to

teaching and learning were more ubiquitous (Geurtz & Read, 2012; Bousbahi & Alrazgan, 2015; Zhou et al., 2022).

The quick development in technology has attained adoption owing to the exponential growth in usage of smart devices, for instance, smartphones and hi-tech laptops at momentous scales. Recent technologies and applications in smart devices have become the key elements of e-learning, communication, resource sharing, and management for both students and faculty (Al-shargabi, et al., 2021). Likewise, Ellis and Calvo (2007) added that the integration of LMS (Learning Management System) in institutions of higher learning is increasing either as a supplement to face-to-face instruction, blended instruction or fully online course offerings. In throwing more light on the relevance of LMS, Ashammari (2015) and Murshitha and Wickramarachchi (2016) argued that LMS is the prominent ICT platform through which mixed learning is offered. For higher education institutions, LMS is perceived as a prospective application where the continuous physical interaction of teacher and student is no longer definite. To Gamede, et al., (2022) an LMS is simply the platform for the storage and delivery of learning materials/activities. LMS comprises over one hundred platforms such as Google Classroom, Moodle, Schoology Learning, Blackboard Learn and many others. It is worthy of notice that the concept of LMS and CMS (Content Management System) is mostly associated with LCMS (Learning Content Management System) and VLE (Virtual Learning Environment). These concepts are often used interchangeably but VLE is mainly the term used in the United Kingdom (Geurtz & Read, 2012).

A distinction was, however, given by Watson and Watson (2007) that LMS is considered as the framework that handles all aspects of the learning process whereas the CMS is defined as a place to manage and organize the contents. Notwithstanding the various interpretations given to the platform for learning, the impact of information and communication technologies (ICT) has affected teaching and learning strategies worldwide and more significantly in the past few years. Bousbahi and Alrazgan (2015) added that it has specifically, enabled learning by electronic media (e-learning). Subsequently, there has been a growing demand for distance and online learning and the education sector is among the promising and profitable sectors which are most impacted by technology adoption due to its enhanced capability of offering high-quality teaching (Al-shargabi et al., 2021), there is the need to keep exploring and using the best of online platforms to facilitate the process of teaching and learning.

The wake of lockdowns globally allowed universities to explore possible choices in selecting specific LMS for teaching and learning. Initially, open sources such as Moodle were considered and used due to the ease of control and ability to mold them to suit the institutions' needs. Other applications that later became popular like the Blackboard served the purpose for the early stages of adoption (Lasanthika & Tennakoon, 2019). Even in selecting this, several considerations would have to go into the decision-making. According to Rogers (2003), these include relative advantage, compatibility, complexity, trialability and observability. Sahin (2006) also added that relative advantage implicitly influences the rate of adoption among the innovative characteristics.

Among the innovation-decision type, the organizational and collective innovation decisions are slower than personal or optional innovation decisions (Rogers, 2003). In this case, the African University College of Communications (AUCC) as an organisation, therefore, decided to introduce an LMS. AUCC introduced

an LMS a few weeks into the announcement of the first case of COVID-19 in Ghana and students together with faculty were made to learn it in the shortest possible time for face-to-face teachings to migrate onto the virtual space. The AUCC, formerly known as the Africa Institute of Journalism and Communications (AIJC), is a private tertiary institution established in 2002 by Hon. Kojo Yankah. AIJC admitted the first batch of Diploma students for its Communication Studies programme in 2002 and was formally accredited as a tertiary institution by the National Accreditation Board (NAB) in 2004 (AUCC, 2022).

Statement of the Problem

As noted by Lasanthika and Tennakoon (2019) instructors and students are the central players in the knowledge-sharing experience. Collective participation of both parties directs the productivity of learning experiences. Therefore, the effective use of an LMS as a learning tool will depend on the vigorous immersion of both teachers and students. E-learning in the instruction system boosts effective curriculum delivery by offering varied learning materials to suit students' learning activities, reinforces face-to-face (blended learning), or assists in distance learning (Gamede et al., 2022). Whereas academics are regarded as the momentous influencers in endorsing and enhancing the use of LMS (Alshammari, 2015). The wake of COVID-19 globally caused a stir in the orthodox ways of teaching and globally, universities were expected to offer tuition to students notwithstanding the pandemic (Maheshwari, 2021). The adoption of technology in doing so became obligatory even though this adoption varied from student to student and same from faculty to faculty. According to Alharbi and Drew (2014), the adoption of LMS by instructors is believed to be influenced by perceived ease of use, perceived usefulness, attitude toward usage and job relevance. However, for students, factors such as attitude towards LMS, self-efficiency, experience and interaction with lecturers and other classmates are of vital influence (Murshitha & Wickramarachchi, 2016).

Significantly, the role of instructors, students and educational institutions in the adoption of such technology is important (Mokhtar, 2018). In a study by Bove and Conklin (2019), they identified that the adoption of and usage of novel, unaccustomed technology by faculty often takes more time to integrate use in their teaching. Lasanthika and Tennakoon (2019) also identified that teachers should be knowledgeable enough to use technology and their knowledge, experience and perception about the technology influences the incorporation of the technology in the e-learning process. Despite the relevance of adopting LMS for teaching, there are some barriers to consistent adoption by faculty. Annan (2008); Green (2014) and (Kagima & Hasafus, 2001) opined that these barriers include technical support from the universities, the technical skills and pedagogical knowledge of the faculty member, and time to design and manage LMS course sites. In knowing the level of acceptance and the causes of resistance, successful implementation can be encouraged in utilizing the LMS as an e-learning platform (Bousbahi & Alrazgan, 2015).

In a study by Kaisara and Bwalya (2021), they noted that the challenges that students face in their preparedness and completing accepting virtual teaching and learning include the cost of ICT infrastructure and services, efficiency and effectiveness of supporting systems like data, power, gadgets, and network coverage. This situation is not different from that of Ghana. At the peak of covid, most students had reservations related to the cost of data, accessibility and familiarity with the usage of the LMS and other virtual means of teaching and learning. However, faculties are at the end responsible for the ultimate decision to either use or sidestep technology. To appreciate why instructors, accept or reject e-learning, one must understand why teachers accept or reject technology (Teo, 2011).

A study by Teo (2011) on the use of IT showed that there exists computer anxiety about the usage of new technology. In his study, Teo (2011) found that females had a higher level of computer anxiety compared to males. This was also identified as one of the influences on the perceived ease of use of an information system. Instructors can get inundated with technical problems when attempting to use an LMS, frequently overwhelming them even before they begin to learn to use the LMS's tools. In addition to a plethora of LMS tools available, redundancies in the LMS can make a simple task, such as uploading course materials, even more, complicated by providing the user with several options to accomplish this (Bove & Conklin, 2019). Universities across the globe have adopted blended learning and teaching approaches. This integrates the power of face-to-face and online learning. LMS such as Google Classroom became prominent in more recent times (Zhou et. al, 2022). Regardless of this, literature on student and faculty adoption of new LMS and other digital learning is scanty. According to Webbstock and Fisher (2016), the successful adoption of e-learning technologies is facing several challenges. The case in many African countries is not different as Bhalalusesa et al., (2013) added, several institutions of higher learning in many parts of Africa are still struggling to completely use LMS in the delivery of curriculum or courses

Previous studies (Al-Busaidi, 2013; Al-shargabi et al., 2021; Bousbahi & Alrazgan, 2015 & Zhou, et.al, 2022) were done in Aisa and the Middle East with others like (Bove & Conklin, 2019; Do, 2008; Geurtz & Read, 2012; Kagima & Hasafus 2001; Lasanthika & Tennakoon, 2019) done in Europe and the United States of America. Little studies were found to have been done in Africa concerning the adoption and use of LMS by students and faculty (Annan, 2008; Bhalalusesa et al., 2013; Gamede et al., 2022; Minishi-Majanja, & Kipling, 2005). Also, most of these studies were done using quantitative approaches. Even though the study done by Elangovan et al., (2021) used a qualitative method, it was not done in the African or Ghanaian context. Minimal research (Awuye-Kpobe, 2015; Dampson, 2021 & Kumi, 2017) was found to have been conducted in Ghana but the focus was only on faculty members' use of LMS and attention was mainly given to public universities. This study, therefore, seeks to explore the possible differences or similarities in the perspective of both faculty and students of AUCC regarding the adoption of the LMS during and after the COVID-19 restrictions.

Purpose of the Study

The purpose of this study was to investigate the perceived differences and similarities in the adoption of the LMS by the students and faculty of AUCC.

Objectives of the Study

1. To investigate the attributes of the LMS that led to its adoption or rejection
2. To explore how perceived ease of use and perceived usefulness influence the level of adoption of the LMS

Research Questions

RQ1. What are the attributes of the LMS that have led to its adoption or rejection?

RQ2. How do you perceived ease of use and perceived usefulness influence the level of adoption of the LMS?

Theoretical Framework

The use of an appropriate theoretical framework in any study is to underpin the study with a framework that analyses the phenomenon for in-depth understanding. Thus, the adoption of an appropriate theoretical framework for this study is to strengthen the discursive understanding of the study. In explaining how new technology was adopted, the Diffusion of Innovation theory and the Technology Acceptance Model are often used by scholars.

The Diffusion of Innovation theory was the principal theory used in agriculture extension after the end of the second world war in the 1970s. it is still used in contemporary times when the extension is largely about the adoption of new technology (Beever, 2016). Advanced by E.M. Rogers in 1962, it is one of the earliest social science theories. It emerged in communication to elucidate how, over time, an idea or product increases impetus and diffuses (or spreads) over a particular population or social system (LaMorte, 2019). Adoption of a new idea, behavior, or product (i.e., "innovation") does not happen instantaneously in a social system; rather it is a procedure whereby certain individuals are more fit to adopt the innovation than others (LaMorte, 2019; Rogers, 2003 & Sahin, 2006).

The four elements of diffusion of innovation include innovation, communication, time and social system. According to Rogers (2003), it is an idea, practice, or project that is perceived as new by an individual or other unit of adoption. One interesting bit of every innovation is the fact that the product, practice, or idea does not have to be a new invention but must be perceived as new by individuals or other units of adoption. To reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to make them aware of all its consequences (Sahin, 2006). The second element of the diffusion of innovation as opined by Rogers (2003) is communication. This he defined as “a process in which participants create and share information to reach a mutual understanding” (p.5). The communication channels denote the medium through which individuals attain information about the innovation and perceive its worth (Zhang et.al, 2015). While mass media channels include a mass medium such as TV, radio, or newspaper and more recently, new media or the internet, interpersonal channels comprise two-way communication between two or more individuals (Sahin, 2006).

Time is an obvious aspect of any communication process, but most communication studies do not deal with it clearly (Rogers, 2003). An important factor in the process of innovation spreading out is time. Time dimension precisely means the length of time by which innovation is completely convincing for potential adopters to decide on the adoption or rejection of innovation (Dibra, 2015). The final element of the diffusion of innovation as expounded by Rogers (2003) is the social system. A social system is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. In a social system or unit, there are norms, opinion leaders and change agents, which variously influence the diffusion process (Minishi-Majanja & Kiplang’at, 2005). Individuals do not routinely adopt novel products and or services. They intentionally decide whether to use a particular one or not.

Every innovation has five attributes as opined by Rogers (2003). The five attributes are relative advantage, compatibility, complexity, trialability, and observability. How people in a social system perceive the five attributes of innovation regulates its degree of adoption (Rogers, 2003). Knowing these attributes will

enable any change agent to adopt the right approach to diffuse the novel product or behaviour within the social system. Rogers (2003) added that the usefulness of research on the attributes of innovations is mainly to predict an innovation's rate of adoption and use.

The first of the attributes as noted by Roger (2003) is a relative advantage. This is a measure of how better-quality innovation is over opposing choice or the preceding generation of the same product. Probable users need to see how the innovation improves their present condition. This first attribute is also seen as the degree to which an innovation is perceived as better than the idea it succeeds. The advantage can be articulated in numerous ways ranging in profitability, time, usability, and social prestige. Regardless, the innovation needs to be perceived, contribution a big reward for adopting the new solution. If a potential user sees no relative advantage in using the innovation, it will not be adopted (Greenhalgh, et al, 2004). Relative advantage has been found to influence adoption and is often found to have the most significant influence on adoption decisions (Rogers, 2003).

The second attribute is compatibility. This refers to the level of compatibility that an innovation has with individuals as they integrate it into their lives. Possible adopters need to know that the innovation will be compatible with their life and lifestyle (Do, 2008). If innovation requires a huge lifestyle alteration or if the user must obtain extra products to make your innovation work, then it is more likely to fail (Rogers, 2003). Compatibility is the degree to which an innovation fits with the existing values, past experiences, and needs of potential adopters. There is strong direct research evidence suggesting that the more compatible the innovation is, the greater the likelihood of adoption (Scott, Plotnikoff, Karunamuni, Bize, & Rodgers, 2008). Innovation can be perceived as compatible with certain facets of the concept and as incompatible with others. For example, an innovation may be compatible with one's values but incompatible with experience (Musa, 2006)

The third attribute as opined by Rogers (2003) is complexity. Complexity refers to perceptions of how difficult innovation is to use or comprehend. It is also seen as the degree to which the innovation is perceived as relatively difficult to understand and use. If innovation is easy to use, it is likely to be easily adopted. The opposite is true for innovation that its usage is cumbersome. "Any new idea may be classified on the complexity-simplicity continuum. Some innovations are clear in their meaning to potential adopters while others are not" (2003, p. 257). To achieve higher rates of adoption, the innovation needs to consider the implications on the consumer to deliver maximum value and minimize any barriers to entry (Scott et al., 2008) Interestingly, an extensive similarity exists between two shortlisted innovation attributes which are complexity and ease of use (Kapoor et al., 2004).

Trialability is the fourth attribute noted by Rogers in the diffusion of innovation theory. This is the degree to which an innovation may be experimented with on a limited basis. Since innovations involve investing time, energy, and resources, innovations that can be tried before being fully implemented are more readily adopted. According to Rogers (2003), innovations that can be tried on a limited basis are more likely to be fully adopted than those that cannot be tested. The final attribute according to Rogers is observability. This is the degree to which the results of an innovation are visible to others. Observability is the degree to which the innovation or its results can be seen by others likely to adopt it. If potential adopters are unaware of the innovation or do not see it being used by their peers, they are less likely to adopt it themselves. (Ferster,

2017). The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it (Rogers et al, 1979).

The second theory that will be used for this study is The Technology Acceptance Model (TAM). Technology Acceptance Model (TAM) was originally proposed by Davis in 1986. The TAM has been demonstrated to be a theoretical model to explain and predict user behaviour of information technology (Legris et al., 2003). The TAM has been the most effective model for this purpose, with its element of "Perceived Usefulness (PU)". This illustrates the potential need for the enhanced performance of the technology to meet the users' needs in a meaningful way (Lasanthika & Tennakoon, 2019). In addition to this, the component of "Perceived Ease of Use-PEOU" also facilitates the interpretation of the behavioural intentions of the users towards a particular technology. The key feature of this model is its emphasis on the perceptions of the potential user. That is, while the creator of a given technology product may believe the product is useful and user-friendly, it will not be accepted by its potential users unless the users share those beliefs (Recker, 2020).

The development of TAM comes through three phases: adoption, validation, and extension. In the adoption phase, it was tested and adopted through a vast number of information system applications. In the validation phase, TAM uses the precise measurement of users' acceptance behaviour in diverse technologies. In the third phase, is the extension, where many researchers are introducing some new variables and relationships between the TAM's constructs (Momani et al., 2017). Perceived Usefulness (U) and Perceived Ease of Use (E) are predicted by extraneous variables such as the social conditions in the environment. The adoption of the LMS by the students and faculty depends greatly on Perceived Usefulness (U) and Perceived Ease of Use (E) which would inform or determine the Attitude Toward Using (A) LMS (Dampson, 2021). Explicitly, students will adopt the LMS for learning purposes if it improves their learning and is devoid of excessive effort (Davis, 1989). Also, investigating technology acceptance helps determine the purpose of teachers' technology use (Scherer et al., 2019)

Siyam (2019) added that the model shows how perceived usefulness and perceived ease of use are strong determinants of attitudes towards technology use. TAM posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) influence one's attitude towards usage, which also influences one's behavioural intention to use technology (a system) and in turn determines the actual use of a technology (Li & Huan 2009). The major components of TAM are further explained below. Perceived Usefulness (PU) is seen as the user's impression that using a particular technology will increase his/her job performance in an organisational environment. Venkatesh and Davis (2000) postulate that PU is positive in predicting a person's acceptance and use of various technologies. The second element is the Perceived Ease of Use (PEOU). With this, it involves the prospective user's subjective probability that using a specific application system will enhance his or her job or live performance. Perceive ease of use (EOU) can be defined as the degree to which the prospective user expects the target system to be free of effort (Davis, 1989). An individual's perception that not much effort is required in using a technology direct a positive implication on the individual's attitude and intention to adopt or use that technology (Kumi, 2017). Attitude Towards Use (ATT) is one's positive or negative feelings concerning executing the target behaviour. It emphasizes that if users realise a system is helpful and simple to use, it leads to them developing a positive attitude toward this system (Chau & Hu, 2001). The final element of the TAM is Behavioural Intention to Use. This

is the extent to which an individual has planned deliberately to perform or not perform some definite imminent behaviour (Davis, 1989). TAM maintains that PU, PEOU and ATT directly influence BIU. If users find a specific technology useful (PU), then they develop a positive intention of using it. Actual Use (AU) simply implies the adoption and practical integration of the technology into one's job. The figure below helps in throwing more light on the TAM.

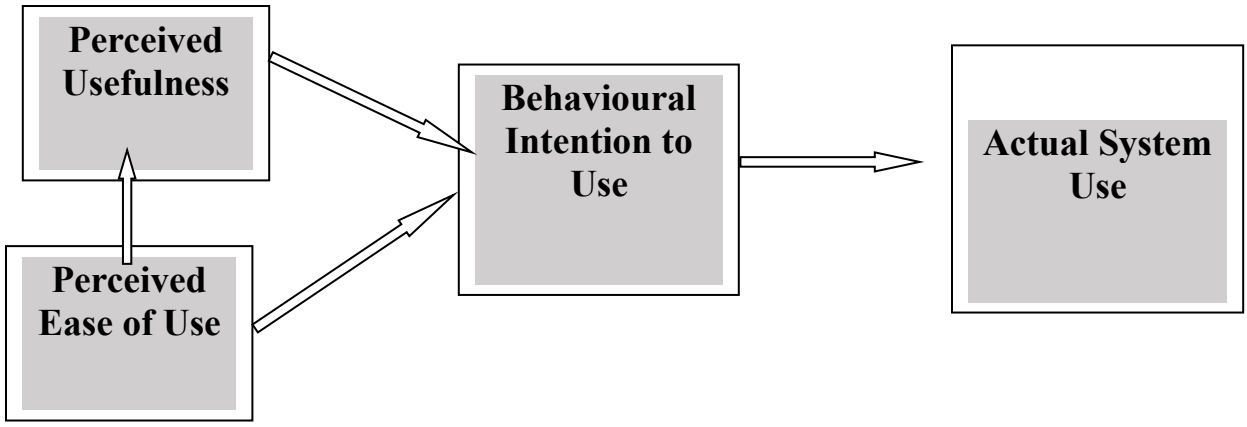

Fig 1: Technology Acceptance Model (TAM) Davis (1989)

TAM has been used by researchers worldwide to understand the acceptance of different types of information systems. Shafeek (2011) in a study tried to evaluate the acceptance of eLearning systems by teachers by using TAM. Other researchers (Abdallah et al, 2016; Boothe, 2017 & Bousbahi & Alrazgan,2015) made use of TAM in similar studies that sought to investigate the adoption of LMS by either faculty or students of institutions of higher learning. This, therefore, informs the decision to use the TAM in this current study. Notwithstanding the relevance of this theory, various researchers succeeding Davis (1989) have, however, suggested modifications to the TAM. Lim (2000) proposed to modify TAM by adding variables like experience, self-efficacy, perceived risk and social influence. Similarly, Agarwal and Karahanna (1998) added cognitive absorption, playfulness and self-efficacy to the TAM model.

Methodology

Research Approach

The research paradigm guiding this study is social constructivism. Social constructivism is an interpretive framework whereby individuals seek to understand their world and develop particular meanings that correspond to their experiences (Creswell, 2013). Also referred to as interpretivism, social constructivism has been associated with the post-modern era in qualitative research (Andrews, 2012). This paradigm views knowledge and truth as created by the interactions of individuals within a society (Andrews, 2012). Social constructionism asserts that knowledge is social in origin; knowledge is not predetermined by some natural order hence, this approach allows the research participants in this study to completely and freely describe their own experiences.

Also, this study made use of one main approach to research; qualitative methods. Qualitative research methods focus on the gathering of mainly verbal data rather than measurements. It is used to gain an understanding of underlying reasons, opinions, and motivations. Qualitative Research is also used to

uncover trends in thought and opinions, and dive deeper into the problem (DeFranzo, 2011). The qualitative research approach has its main attention on the narrative of the investigation. It is an examination of a variable or phenomenon in a deep comprehensive manner (Rhodes, 2014). These qualitative research approaches help to explore and understand the meaning individuals or groups ascribe to a social or human problem (Creswell, 2014).

Research Design

Research design is defined as "a set of guidelines and instructions to be followed in addressing the research problem" (Welman & Kruger, 2002:107), According to Creswell (2014), significantly, the selection of an appropriate design depends on the nature of the research, the research problem and questions, personal experiences of the researcher, and the type of audience for the study. The case study approach was selected because of its ability to acquire information through each individual's experiences and to examine their attitudes and motivations in a real-life context (Boothe, 2017). To Yin (2009), case study research begins with the identification of a specific case. This case may be a concrete entity, such as an individual, a small group, an organization, or a partnership. A case study "explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (observations, interviews, audio-visual materials, documents and reports) and reports a case description and case themes" (Creswell, 2014 p. 97). According to Yin (2009), case studies are potentially explanatory. An explanatory case study is an appropriate means of exploring and explaining the process of adoption of innovation. The purpose is to explore the experiences of eight individual lecturers and eight students as they move from considering the adoption of AUCC LMS to integration or failure to adopt it.

Sampling Technique and Sample Size

For a qualitative study of this kind, a total of sixteen respondents sharing the described characteristics were involved in the study. The ideal number of respondents for a qualitative study was stated by Proctor (2003:529), He noted that qualitative research "usually involves small samples, which attempt to elicit descriptive information about the thoughts and feelings of respondents' on a topic of interest to the research". The inquiry for faculty was designed to elicit responses about teaching and learning using the LMS. The target population comprises all the memberships of a group to whom the study is targeting or connected. Consequently, the members of the population should meet certain suitability criteria to be considered for the study. Based on this, the population of this qualitative study was the entire student body and faculty of AUCC. There is, however, the need to select a few to represent the population hence sampling was done. Sampling is the process of selecting a subset of the population and then generalizing it to a much larger population (Babbie & Rubin, 2008). Out of the population for the study, sixteen respondents were purposively sampled. This type of sampling is where members of the target population that meet certain practical criteria, such as easy accessibility, their knowledge of the subject matter and their willingness to participate are included in the study (Dörnyei, 2007). This included eight faculty members and eight undergraduate students from both the Kojo Yankah School of Communication Studies and the Sam Jonah School of Business.

Data Collection

Creswell (2013) observed that the data gathering in case study research is characteristically extensive, drawing on numerous sources of information, for instance, observations, interviews, documents, and audio-visual materials. The qualitative design dealt with the face-to-face interview of respondents within the research scope. This implies the design of an interview guide. The interview guide included details that streamlined the interview process to ensure that only relevant questions are interrogated according to the research objectives. Interviews are typically face-to-face conversations between a researcher and a participant involving a transfer of information to the receiver (Cresswell, 2014). In-depth interviews are qualitative data collection method that involves direct, one-on-one meetings with individual participants. In-depth interviewing can take place face-to-face, or in some cases over the phone (Steber, 2017). In modern times, several other methods are used in conducting interviews; the use of mobile applications is top on this list. The use of qualitative techniques like the in-depth interviews were employed to achieve the objectives of this study.

Data Analysis Method

Data analysis is the procedure that involves the inspection, cleaning, and transforming of data gathered from the field to highlight useful data for positive conclusions and the compilation of accurate results to form the basis of decision-making (Aggarwal, 2008). To identify patterns of meaning in a qualitative dataset, Braun et al., (2016) suggested the use of thematic analysis. The thematic analysis provides a technique for recognizing patterns (themes) in a dataset, and for describing and understanding their connotation and significance. In analysing this study, the six-phase model proposed by Braun and Clarke (2013) were followed. This normally constitutes a recursive, reflexive process of moving forwards (and sometimes backward) through data familiarization, coding, theme development, revision, naming, and writing up. After the interviews were done, the data gathered was edited and coded. In doing the coding, the attributes of innovation (Rogers, 2003) and components of TAM (Davis, 1989) were used as the deductive coding approach to generate themes. Deductive coding allows the researcher to approach analysis with a very tightly focused lens and quickly identify relevant data (Crosley, 2020). This led to the use of Relative Advantage, Compatibility, Complexity, Trialability and Observability as the major themes for the first theory and Perceived usefulness, Perceived ease of use, Behavioural intention to use and Actual system use for the second theory used for this study. This is much more than merely summarising the data; as Braun and Clarke (2013) mentioned that a good thematic analysis interprets and makes sense of the dataset. A common drawback, however, is to use the main interview questions as the themes.

Findings and Discussion

The study seeks to address questions like what are the attributes of the new LMS that led to its adoption or rejection, and how do perceive ease of use and perceived usefulness influence the level of adoption of the LMS by the students and faculty of the University College. This will give an insight into the reasons for the adoption or rejection of the LMS. In answering the first question identified in this study, the following themes were outlined; Relative Advantage, Compatibility, Complexity, Trialability and Observability. The second research question led to the identification of themes like the perceived ease of use, perceived usefulness and actual system use.

Relative Advantage

Relative advantage refers to the evaluations that intended audience members make about the potential rewards and detriments of adopting an innovation (Kreps, 2017). Roger (2003) also opined that relative advantage is a measure of how better-quality innovation is over opposing choice or the preceding generation of the same product. Probable users need to see how the innovation improves their present condition. From what was gathered from the respondents, it was clear that there are varied views on the relative advantage that the AUCCLMS has. To most of the students, they are unable to identify what the current LMS does that is different from the previously used portal where they access their results. According to R1:

> I remember that we were introduced to one online portal for studying when we were in the first year. Most of the lecturers organised their mid-semester exams on it. I think it was effective. I am yet to see how this new one is better.

In another interview with a student, she was able to identify what the differences are and claimed he preferred the new LMS over the previously used one. R3 mentioned added that the new LMS, is in a form of a mobile application so she was able to download it and run it on her smartphone. For this reason, she was quick to confirm that the new AUCCLMS is better than the previous portal being used. In gathering the views of the lecturers on the relative advantage of the new LMS, they had a similar stance on it. Most of them did not see the need for a new LMS to be used by the University College. To them, the previous portal they were using works just fine hence the school's management should not have wasted money on acquiring a new portal. According to R11:

> I was a bit shocked when I got the information about a new LMS. The old portal was working perfectly for me. I honestly think it is a waste of money.

Another view shared by R5 showed that the university college probably needed to introduce the a new LMS to meet requirements. R5 made it clear that the decision was made in a management meeting to adopt a new LMS to fulfil requirements for reopening of schools post-COVID-19 lockdown period. Also, he has adopted other means of engaging the students so does not use the new LMS. According to him:

> After the lockdown, the school had to reopen. This means we have to use online to teach, I mean virtual means of teaching. It was then decided to contract a developer to develop a more effective one. I am not sure I have noticed what makes this better aside from being able to download it onto your device.

The view of the R5 is corroborated by what was shared by Greenhalgh, et al, (2014) that if a potential user sees no relative advantage in using the innovation, it will not be adopted.

Compatibility

The second attribute is compatibility. This refers to the level of compatibility that an innovation has with individuals as they integrate it into their lives. Possible adopters need to know that the innovation will be compatible with their life and lifestyle (Do, 2008). If innovation requires a huge lifestyle alteration or if the user must obtain extra products to make your innovation work, then it is more likely to fail (Rogers, 2003).

In investigating this, the respondents were asked how the LMS fits or is compatible with their lifestyle. To most of them, they were able to confirm that the LMS is compatible. From what was gathered from the students, they likened using the LMS to any other social media App that they have on their smartphone. The views of R12 and R4 on the compatibility of the LMS to their life and lifestyle are expressed respectively below:

> I am often on Facebook and WhatsApp so this new one is just like using any other App. As long as I have data, I am good to go. Being able to install the App on my phone makes it convenient for me so I think I am okay with it

The views shared by the faculty are similar to those shared by the students. It was discovered that most of the faculty interviewed believed that they do not have to make any significant lifestyle alterations to be able to use the new LMS. They made it known that they were already using online means of teaching and assessing the students so the new LMS was just to bring added features. According to R7:

> Earlier, we were using auccelearning.com to do our teaching and assessments. The new one still means we are going online to do similar things. I do not think the difference is that much.

From this finding, it is clear that the level of compatibility for the LMS is high and this has positively affected the level of adoption. As argued by Scott et al (2008) and Rogers (2003), the more compatible the innovation is, the greater the likelihood of adoption.

Complexity

The third attribute as opined by Rogers (2003) is complexity. Complexity refers to perceptions of how difficult innovation is to use or comprehend. The easier it is to understand and use innovation, the more likely it will be adopted. To achieve higher rates of adoption, the innovation needs to consider the implications on the consumer to deliver maximum value and minimize any barriers to entry (Scott et al., 2008). In investigating this, the respondents shared varied and divergent views. What run through most of the responses, however, was the fact that most of them are still facing challenges in using the AUCC LMS App. According to R15:

> I remember there was an instance when we had to do one of our mid-semester exams online. It was a disaster. Most of my colleagues were struggling to use it. You know, it is not all of them who really know how to use smartphones well; the older ones.

Based on this, some students would rather prefer the use of orthodox means of teaching and assessment than go through the hustle of online approaches. For the students to be able to adopt the new LMS, it should be easy for them to understand and use it. The views of lecturers taken on the ease of use also indicated similar concerns as raised by the students. All the lecturers interviewed, faced initial challenges adapting to the new settings and features. This made some lecturers not use it all. According to R6:

> A colleague once told me that he is struggling to understand where the features are all hidden. I had to take my time to explain the bit that I know to him

According to R5, he is not too good with the use of modern technology so he does not fancy teaching online. The traditional ways of teaching are ideal for him. When he was asked about the new LMS, he made it clear that he is yet to fully grasp how it works perfectly. Even though he has spent some time trying to understand it. When asked if his view was taken into consideration during the designing of the AUCC LMS, he was quick to say "No". Given that considerations were not given to the views of the end-users of the LMS, the implication will be with the ease of use. According to Scott et.al, (2008) to attain higher rates of adoption, the innovation needs to consider the implications on the consumer to deliver maximum value and minimize any barriers to entry. Kapoor, Dwivedi and Williams (2004) added that an extensive likeness exists between two innovation attributes; complexity and ease of use.

Trialability

The study further investigated the level of trialability as opined by Roger (2003) that was experienced in the usage of the new LMS. This is the degree to which an innovation can experiment on a limited basis. There is good news in this area. This attribute of the innovation allows the users or adopters to test the novel technology and get conversant with it before deciding to adopt or not adopt. To address this, the respondents were asked if their views were taken into consideration during the design and implementation of the AUCC LMS. From the responses gathered, it is clear that none of the students and faculty were consulted. They made it clear that they were just introduced to the application without prior information. According to R6, it would have been ideal for the views of the lecturers to be taken before the LMS became fully operational.

> R6: If we were consulted from the beginning, we probably would have suggested what we want to be included or taken out. Even though it performs a similar function as the earlier one, our input would have been significant.

The students and faculty were also asked if they received any form of training before the LMS was fully operational. Data gathered from the student respondents showed that they were not given enough training on how to use the LMS. According to most of them, they only learned something new about it each time they had to use it for any form of assessment. This has directly influenced the rate of adoption. This was observed by Sahin (2006) that trialability is positively correlated with the rate of adoption. The more innovation is tried, the faster its adoption is.

Notwithstanding some respondents attesting to the fact that the new LMS is well-suited, another respondent gave a divergent view on this. The respondent made it clear that the new LMS looks a bit complicated and there was no one readily available to assist students in using it. Similarly, most of the respondents believed that the LMS should have been introduced earlier in the semester to allow them to try it out and know how it works. According to R4:

> We were introduced to it somewhere in the middle of the semester. What we had was just like, instructions on how to use it. I think that is different from proper training. I struggled and I saw my colleagues struggling as well.

Based on the meaning given to "trialability" by Kreps (2017, p 9) "trialability is providing audience members with first-hand or virtual experience using the innovations", from the data gathered from all the

respondents, it is clear that the students and faculty's inability to have a good experience of the LMS before its introduction has affected the levels of adoption.

Observability

Observability refers to showing audience members how relevant others have utilized and benefited from adopting the innovation. For example, providing vivid examples of how others have adopted, utilized, and benefited from the adoption of the LMS in other institutions of higher learning (Kreps, 2017). The study further interrogated the observability of the innovation. In this case, the data gathered was around how respondents can have access to instances where similar others have used LMS and it has ideally worked for them. From what was gathered, the respondents were able to give instances where they have heard and seen their colleagues in different schools using a similar LMS in their studies. All the students interviewed gave instances where they saw a friend or relative in different institutions using LMS in studying and assessments. However, the data gathered showed that the main challenge was not about the students and faculty's knowledge about the existence of LMS as used by others in different institutions, the major issue was with the little information they have about using it. In an interview with R9, and R10 they shared their experiences:

> I don't think LMS is entirely new. I have friends in other schools who have been using it for a while. It was just that in the wake of COVID-19 my institution was prompted to use it. We should have been given enough training though.
>
> LMS may be new to us here but it has been there for a while. I used one where I used to teach but switching to this one requires some training I believe.

If potential adopters are unaware of the innovation or do not see it being used by their peers, they are less likely to adopt it themselves (Ferster, 2017). This suggests that faculty is more likely to adopt the LMS because they have prior knowledge about its existence. Given the sufficient information on it, they will be able to easily adopt it. This is corroborated by Rogers et al, (1979) that the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

Perceived Ease of Use

Concerning the perceived ease of use of the AUCC LMS, divergent views emerged. While some students likened it to other social media Apps so they are able to easily use it, other students, relatively the older ones struggled to use the LMS when it was introduced. The situation was similar with the lecturers as well. Some of the lecturers are used to conventional means of teaching and are not technologically inclined as well hence they struggled in using the App when it was introduced. According to a student interviewed;

> I am not really IT inclined so I struggle most of the time we have to use it so Mid-sem. I often get my colleagues to assist me though

This is corroborated by a study by Alharbi and Drew (2014) where they found that the adoption of LMS by instructors is believed to be influenced by perceived ease of use, perceived usefulness, attitude toward usage and job relevance. Also, Dampson (2021) found that the adoption of the LMS by the students and faculty

hinge largely on Perceived Usefulness (U) and Perceived Ease of Use (E) which would advise or direct the Attitude Toward Using (A) LMS (Dampson, 2021).

Perceived usefulness

Data gathered from all the respondents indicated that they appreciate the usefulness of the LMS as they all made it clear that it facilitates virtual teaching and learning. On the part of the students, it was discovered that they do not have to keep relying on one person to share course materials because they can always have access to them on the LMS. One student interviewed mentioned that the whole class previously relied on the course representative to share materials but since the introduction of the LMS, they are all able to go on the app and download materials. On the part of the lecturers interviewed, the relevance of LMS was mostly seen during the lockdown period; It enabled them to keep the class running. According to a lecturer, R15:

> During the lockdown and COVID-19 restrictions, the LMS was useful in keeping academic works going. For me, I was facing some challenges initially but soon after, oh, I was good to go so it helped.

According to Siyam (2019) the TAM model shows how perceived usefulness and perceived ease of use are significant factors influencing the use of novel technology. The findings from interviews conducted confirmed this.

Actual System Use

Notwithstanding the perceived ease to use and perceived usefulness of the LMS as gathered in the interviewed conducted, the findings shows that the actual system use is considerable low. For various reasons, lecturers who are supposed to facilitate the use of the LMS soon stopped after the COVID-19 restrictions were lifted. The students mostly use the LMS when they have to write their mid-semester examinations and even with this, a considerable number of students struggle to use it. The study established that there are older students who have challenges in using technology hence the challenge.

Conclusion

The study seeks to investigate how the attributes of the LMS can influence the rate of adoption among the students and faculty of AUCC. Using a qualitative approach, data was gathered from seven respondents. Four of which are students and three faculty members. With the use of deductive codes from Rogers (2003), attributes of innovation like a relative advantage, compatibility, complexity, trialability, and observability were used as themes for further analysis of findings. From the data gathered, it was clear that concerning relative advantage, there were divergent views. Some students preferred the new LMS because they can download it and run it on their smartphones hence having an advantage over previously used one. On the contrary, most faculty interviewed saw no need for the new LMS. To them, it serves a similar function as the old portal they were using. With compatibility, all the respondents gave indications that the new LMS did not require any lifestyle change in use. They still have to go online and rely on the internet to make correct usage of the LMS. Being able to install the App on smartphones made it a lot more convenient for student users. While to the faculty, it is just like an extension of the old portal previously used. For this reason, AUCC faculty are not using it effectively, and sometimes it is not used at all.

Regarding Complexity as an attribute of the LMS, the respondents gave a varied view on this. To some, they were able to easily use it while others faced significant challenges in using hence making it a bit

difficult for them to adopt. In using the LMS, a mobile application was also developed for the students. Most of them made it clear that they were facing challenges in using it. Similarly, the faculties interviewed for this study had similar issues adjusting since the interface is different from the portal that was previously used in entering grades so, to a few of them, they would rather use the orthodox method of face-to-face teaching.

Trialability students made it clear that they received little training on how to use the new LMS. To them, it was more of instructions than proper training. The students interviewed said they were only instructed on how to use the LMS for their quizzes when the lecturers show up. They believed that when they are given good training, they would not be struggling in using it. From data gathered from the faculty, they believed that they should have been consulted during the designing of the LMS so that they can make contributions as to how they wanted it. Generally, due to low trialability, the level of adoption by both the students and faculty was adversely affected.

Regarding observability, however, all the respondents interviewed in one way or the other have experienced an LMS before. This is either directly or indirectly. To the students, they have seen their friends in other universities use the LMS mounted by their institutions. So to them, they already know what LMS does and how it assists in teaching and learning. According to the lecturers, even though it is new to AUCC, they have had experiences with it in other institutions where they previously worked. To others, they at least know a colleague lecturer in a different institution who uses an LMS.

Even though data from the study showed divergent views on perceived ease of use, older students and faculty alike face some challenges adapting to the new technology. Also, all the respondents interviewed confirmed the usefulness of the AUCC LMS. To them, it facilitated teaching and learning most especially during the COVID-19 restrictions. Notwithstanding the usefulness, the actual system use is low. Data gathered showed that faculty members mostly use the LMS when they have to conduct some form of assessment, in particular, mid-semester examination. Some lecturers and students who are not technology inclined do not use it at all.

Finally, results from the data gathered showed that when faculty did use the LMS, they did so to efficiently manage their courses by providing materials to students and sending out announcements, and assignments. Overall, this study shows that for the faculty of AUCC, the LMS is used minimally as compared to what the LMS purportedly can do. On the part of the students, the usage is also minimal. The study showed that most of them only use the LMS when they are instructed to do so or when there is a quiz to be done. Students and faculty alike in AUCC need the necessary support to maximize the use of LMS for curriculum delivery, especially during an outbreak of a pandemic like COVID-19. The continuity of academic activities during the pandemic is assured with the adoption of an LMS. For this reason, LMS has been recognised as an effective approach for delivery to students without any challenges. The success of e-learning management systems implementation in any institution of higher education, however, begins with instructors' acceptance and usage.

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