

An Analysis of Factors Affecting Utilisation of Moodle Learning Management System by Open and Distance Learning Students at the University of Eswatini

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ABSTRACT

The use of technology in teaching and learning for students in Open and Distance Learning (ODL) is important in bridging the gap between the student, the lecturer and the content. Furthermore, technology enhances communication between staff and students and among students to improve the quality of learning experiences. The study sought to establish institutional and personal factors promoting or hindering ODL students' utilisation of the Moodle Learning Management System at the University of Eswatini. A concurrent triangulation design located in the pragmatic research paradigm combining the quantitative and qualitative research approaches was utilised in the study. One hundred and ninety-eight (198) students studying different programmes offered through ODL responded to a questionnaire. The semi-structured questionnaire was administered to a stratified random sample of ODL students at different levels of study in the university. Quantitative data were analysed using the SPSS software and reported in descriptive statistics. The identified factors were correlated with students' usage of the LMS to assess whether there was any relationship. Thematic analysis was used to analyse qualitative data. The study found that ODL students' perceived usefulness and ease of use, trust and satisfaction affected their usage of Moodle albeit there was weak to moderate positive relationships. Qualitative data on challenges experienced by students in using Moodle unearthed institutional factors such as inadequate technological infrastructure and insufficient student training and support. The study recommends improvement of the institutional internet bandwidth soon as well as continuous training and support for both students and course instructors.

Keywords: Factors, Moodle learning management system, Open and distance learning, Students, Technology acceptance model.

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Highlights of this paper

- The use of a Learning Management System (LMS) is very important in enhancing the quality of content delivery in open and distance learning.
- The study found that ODL students' perceived usefulness and ease of use, trust and satisfaction affected their usage of Moodle albeit there was weak to moderate positive relationships. Qualitative data on challenges experienced by students in using Moodle unearthed institutional factors such as inadequate technological infrastructure and insufficient student training and support.
- The study recommends improvement of the institutional internet bandwidth soon as well as continuous training and support for both students and course instructors.

1. INTRODUCTION

The use of educational technologies or Information Communication Technology (ICT) is an integral part of Open and Distance Learning (ODL). It diminishes the distance between the instructor, the student and the content, and among students through allowing virtual communication and interactions (Oliveira *et al.*, 2016). Thus, allowing the meaningful exchange of information at any distance (Leontyeva, 2018). Many Higher Education institutions, the world over, have introduced web-based Learning Management Systems (Fung and Yuen, 2012; Raman *et al.*, 2014; Kljunic and Vukovac, 2015; Oliveira *et al.*, 2016; Suradi *et al.*, 2018).

A Learning Management System (LMS) is a web-based software application that is designed to handle learning content, student interaction, assessment tools and reports of learning progress and student activities (Srichanyachon, 2014). A LMS is a server-based or cloud-based software programme. It supports teaching and learning activities and manages communication associated with them (Radwan *et al.*, 2014). It contains information about users, courses and content. LMSs provide Virtual learning Environments (Sharma and Vatta, 2013) and a very authentic and structured experience of virtual learning (Chaubey and Bhattachary, 2015).

LMSs are for the administration, documentation, tracking, reporting and delivery of e-learning education courses or training programmes (Sharma and Vatta, 2013). They organise content, courses, sections, faculty, students, and grades, and increases productivity (Macpherson *et al.*, 2006). Westera (2015) noted that as distance education became more ubiquitous, the need for a single LMS became necessary for those universities offering distance education.

The four major features of a LMS as identified by Dabbagh and Bannan-Ritland (2005) cited in Swart (2015) include:

1. Content - The ability to upload and download relevant electronic documents, spreadsheets, presentations, images, animations and audiovisual material.
2. Assessment - The ability to implement a variety of assessments, including diagnostic, formative, summative and self-assessments, to test, survey and track student achievement in a course.
3. Communication - The ability to foster student academic and student-student interaction utilizing asynchronous and synchronous tools.
4. Administration - The ability to monitor and manage students, academics, courses and grades.

1.1. Uses of the Learning Management System

The LMS is a complementary tool that enhances the efficiency and effectiveness of teaching and learning, and subsequently improves student performance (Fung and Yuen, 2012). The system provides all sort of support for instructors to create and manage the courses and interact online (Raman *et al.*, 2014). It is used as an information technology resource to support on- and off-campus online education, including supporting face-to-face instruction, blended instruction, and distance education (Walker *et al.*, 2016). A LMS is used to manage course catalogues,

record data from students and provide reports to management, students also get their learning progress, instructors upload, discuss and review assignments, they also supervise, assist and evaluate students (Radwan *et al.*, 2014).

Like many other universities, the University of Eswatini recently adopted a Blended Learning approach and introduced the Moodle Learning Management System for online learning. The university is a dual-mode institution offering its programmes through both conventional full-time and Open and Distance Learning through the Institute of Distance Education, which was established in 1994. The main function of the Moodle LMS is to deliver learning content from course instructors to students. The LMS is designed to be used by course instructors for teaching, discussion forums, posting course syllabus, course lectures, course assessment tasks e.g. quizzes and tests, grades and, at times, for announcements. The course instructor creates and manages course content, assesses student performance and communicates with students on this platform. The materials include lecture notes in PDF format, podcasts, screencasts and videos. Each course has a distinct webpage on Moodle which students can access once they are registered. Students are trained on how to use the Moodle LMS in a general course on Computer Skills which they all take at first-year. Support is provided through the availability of a Technologist in the Computer Laboratory at the campus and regional digital centres.

1.2. Advantages of LMS

There are many advantages of a LMS (Sharma and Vatta, 2013). It provides a place to learn and teach without depending on the time and space boundaries allowing a student to learn from anywhere and at any time without place and time constraints (Bonk and Graham, 2006). A LMS has the capabilities of creating, fostering, delivering, and facilitating learning at anytime and anywhere (Swart, 2015). The flexibility and widened coverage are echoed by other scholars. According to Epping (2010) LMS increases accessibility and flexibility, it is cost-effective, and provides an opportunity for reaching a large global dispersed audience in a short period with consistent content delivery.

The system also supports content in various formats, e.g. multimedia, video, and text as well as access to course material at any time. Course material is updated and students can see the changes made in the particular field. Instructors can modify information according to the need of the student. Various activities are offered to the students to make choices out of it. Re-use of the learning activities can be done. By re-using content, time and effort can be saved and the cost of improving online content is also reduced. The delivery of content in different format and flexibility in provision accommodate different learning styles, matching individual needs, fostering self-paced learning, and promoting life-long learning, one knows how to learn not what to learn (Smaldino *et al.*, 2005).

Learning Management System can help students to access learning information via course guidelines, uploading assignments and downloading marks, active interaction between students and course instructors, the interaction between and among students, the interaction between students and learning tools, sharing knowledge, and taking online examinations and quizzes (Kasim and Khalid, 2016). Other advantages of using LMS include increasing the quality of learning by providing students with technological skills, causing them to be more interactive, helping instructors to provide their students with learning materials and managing student registration (Macpherson *et al.*, 2006; Altun *et al.*, 2008; Chang, 2008).

LMS is very easy to operate and contains various instructional and administrative functions, that help students to complete the task quickly and upload various files. Radwan *et al.* (2014) notes that LMS provides users with attractive, user-friendly, secure, and comprehensive interactive interface with easy to follow facility. LMS supports different features which are student environment, instructor tools, course and curriculum design, administrative

tools and technical specifications, and its use promotes learning, increases students' motivation, encourages interaction, provides feedback and provides support during the learning process (Sharma and Vatta, 2013; Radwan *et al.*, 2014). LMS enhances learning abilities and supports high order learning, including problem-solving, critical thinking, and collaboration skills (Chaubey and Bhattachary, 2015).

Regardless of its benefits, research has revealed that the LMSs are not always effectively used (Fung and Yuen, 2012). A plethora of factors may promote or impede the adoption and use of LMS in learning institutions. The factors could be internal or external (Leontyeva, 2018). Leontyeva (2018) identified several internal and external factors that hinder the implementation of modern distance learning technologies which are limited scope and range of implementation; the problem of resources control; incorrect evaluation of marketing advantages; limited resources, and inappropriate administrative structure. These factors are both student- and instructor-related (Fung and Yuen, 2012). Fung and Yuen (2012) grouped the factors that affect the use and adoption of technologies in distance learning into six dimensions: teachers, students, resources, technology, curriculum, and pedagogy. They assert that these factors should not be investigated in isolation but holistically.

1.3. Factors affecting ODL Students' Utilisation of the Moodle LMS

In this section, we review related literature on the utilisation of LMS by students in institutions of higher learning.

1.3.1. Factors that Promote the Use of LMS

Availability of technological devices that could be used for learning can promote adoption and use of LMS. Beatty (2017) notes that small handheld computers such as smartphones and tablets are generally affordable and students utilise them to enhance learning. Students may download LMS applications onto their handheld devices and opportunities for learning are expanded. The utilisation of handheld devices marks the existence of mobile learning (M-Learning) which evolved from e-learning as students now learn by using smaller and more manageable and transportable devices (Kee and Samsudin, 2014).

McAlister (2009) notes that students nowadays feel very comfortable with the use of technological gadgets and generally referred to as digital natives who "appreciate the multi-sensory engagement that comes from working in a variety of media." So, in instances where students find it easy to embrace technology, the utilisation of technology in teaching and learning becomes very easy. Students will not be coerced to use technology but the use comes naturally, as they are acquainted on technology use in other facets of life. It is further observed that the presence of handheld devices has "changed the learning methods and learning strategies of today's teenagers" (Kee and Samsudin, 2014). So, the existence of technological devices is an important factor promoting the use of Learning Management Systems in institutions of higher learning.

Renfro (2012) argues that students nowadays dislike the use of the traditional classroom settings and traditional approaches to teaching and learning and are more open to personalised education and immediate feedback. This becomes a positive factor that promotes the use of LMS as it provides students with access to learning materials and activities all the time, without necessarily waiting to attend classes.

Student Self-efficacy is also deemed as a factor promoting the use of LMS as a component of e-learning. Venkatesh and Davis (2000) state that self-efficacy is the self-belief of the students about their capacities that they workout to reach the assigned level of accomplishments in an e-Learning system. In this regard, if students view themselves as capable and having the ability to utilise LMS, they are bound to work very hard to meaningfully

utilise an LMS. The opposite is also true and in instances where students have low self-efficacy, the utilisation of LMS would be minimal.

1.3.2. Factors that Hinder the Use of LMS

Effective utilisation of LMS is dependent on the availability of technological devices. [Vasant \(2015\)](#) notes that in the absence of devices provided by institutions, students should bring their own devices in line with the BYOD (Bring Your Own Device) concept and once students bring their own devices, they exercise agency in the learning process and take ownership of learning and enhance the quality of learning. However, the BYOD approach would need to be contextualised. In some institutions of higher learning in sub-Saharan Africa, some students may not afford devices and this becomes a hindrance to the effective utilisation of the LMS. Students in rural universities like the University of Venda find these technologies expensive and unaffordable ([Patel et al., 2017](#)).

[Albidewi and Tulb \(2014\)](#) note that one factor that may hinder effective utilisation of learning platforms in universities is the issue of huge costs regarding technology infrastructure. If the relevant infrastructure such as the relevant and functional internet bandwidth is not available then the utilisation of e-learning platforms becomes problematic. Students should not experience problems like failure to upload or download material on the LMS because of low internet speed or erratic functioning of the internet system. This becomes frustrating to students. Upgrading infrastructure may be costly.

[Albidewi and Tulb \(2014\)](#) also reveal that the proper utilisation of learning platforms may be negatively affected by challenges in the training of staff and students in technology use. There is a need for adequate preparation of both staff and students to realise the effective implementation of e-learning through proper use of LMS. [Moonsamy and Govender \(2018\)](#) note that staff in the university may not be very proficient in technology usage and would require training so that they utilise LMS, encourage students to use it and adequately support the students.

The issue of internet access and well-functioning broadband is also noted as a factor that may negate the proper utilisation of LMS for effective e-learning. Instructors and students may experience challenges in having personal technological devices and internet connection at home and in institutions of higher learning ([Obisat et al., 2013](#); [Sung et al., 2016](#)). Effective use of LMS is only possible when staff and students have unlimited access to technological devices and internet access.

1.4. The Technology Acceptance Model (TAM)

The theoretical framework which provides the theoretical lens to this study on factors affecting the utilisation of the Learning Management System was the Technology Acceptance Model (TAM) ([Davis, 1989](#)). The model was developed by Fred Davis and Richard Bagozzi ([Davis, 1989](#); [Bagozzi et al., 1992](#)). TAM underscores the importance of three factors; ease to use, effectiveness and usefulness as important considerations technology acceptance by users. It is, therefore, important for students in ODL to find LMS ease to use, effective and useful so that they utilise it in their learning. Students' attitudes towards technology use as well as behavioural intention to use are also important considerations as espoused by the TAM.

According to [Suradi et al. \(2018\)](#) the four main variables in the TAM for assessing the acceptance of technology are perceived usefulness, perceived ease of use, trust, and satisfaction. For a user to use the technology, they must find it useful, easy to use, trustworthy, and be satisfied with their experiences in using it. In this study, the TAM was used as an analytical framework in assessing whether the usage of Moodle LMS by ODL students at UNESWA was affected by these four factors.

1.5. Research Questions

In this paper, the authors argue that if the Moodle LMS is not used or adopted by its intended users its benefits will never be realised. Hence, this study investigated factors affecting the utilisation of the Moodle LMS by Open and Distance Learning students at the University of Eswatini. It focused on the following research questions:

1. What technological devices that could be used for learning do ODL students at the University of Eswatini have?
2. What factors affect ODL students' utilisation of the Moodle LMS at the university?
3. What challenges, if any, do UNESWA ODL students experience with Moodle LMS?

2. MATERIALS AND METHODS

A mixed-methods approach, located in the pragmatist research paradigm was utilised in the study. The study combined quantitative and qualitative research approaches. A concurrent triangulation design in which both quantitative and qualitative data were collected at the same time, was followed. A semi-structured questionnaire with closed and open-ended items was administered to a stratified random sample of ODL students in the university. The closed items sought information on students' demographic information (gender, age, the programme of study, and level or year of study); availability of technological equipment and data; training on Moodle LMS; usage of Moodle LMS; Usefulness of the LMS; ease of use; satisfaction; and trust. The demographic variables yielded nominal data while the others had options of 'yes', 'no' and 'maybe' or scale of strongly agree (5), Agree (4), neutral (3), disagree (2), and strongly disagree (1). The questionnaire also had open-ended questions about the challenges which students experience concerning Moodle LMS as well as suggestions on how the system usage could be improved. Quantitative data were analysed using the SPSS software and reported in descriptive statistics including frequencies and means. The correlation was calculated to determine relationships between usage and the four main factors (usefulness, ease of use, trust, and satisfaction). Qualitative data were analysed using content analysis. Ethical issues, such as research permission, informed consent, confidentiality and anonymity, were attended to.

3. RESULTS

3.1. Students' Demographic Profile

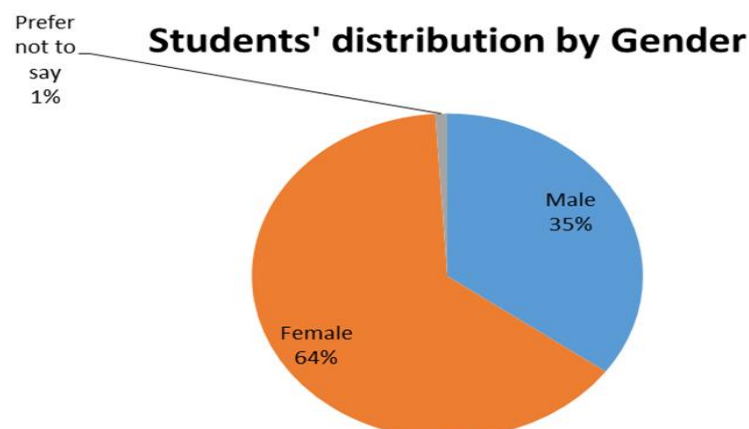


Figure-1. Students' distribution by gender.

As shown in Figure 1, in terms of gender, there were more female respondents (64%) compared to male respondents (35%). This pattern was consistent with the trend of the general student population in the Institute under study where the majority of students were female.

Table-1. Distribution of respondents by age and programme of study.

Demographic variables	Variable description	Frequency	Percentage (%)
Age	Less than 30	95	48
	30 – 40	84	42.4
	41 – 50	16	8.1
	51 – 60	3	1.5
Programme of study	B. A Humanities	23	11.6
	B. Com	32	16.2
	B. Ed Primary	21	10.6
	B. Ed Secondary	55	27.8
	Certificate in Psychosocial Support	35	17.7
	Diploma in Law	4	2.0
	LLB	15	7.6
	PGCE	13	6.6

Table 1 shows that students were relatively young with the majority (90%) being less than 30 years old (48%) or between 30 – 40 years (42.4%). Very few were between 41-50 (8.1%) or above 50 years (1.5%). The majority of the respondents were from the Bachelor of Education programmes (n=76) and were first (41.4%) - and second (22.7%) - year students. The high percentage of young respondents could be attributed to the ever-increasing number of school graduates enrolling in the Institute, which is also a trend in other ODL institutions (Puspitasari and Oetoyo, 2018).

3.2. Students' Possession of Technological Devices

In the first research question, the researchers sought to establish the respondents' level of possession of technological devices necessary for use in accessing the LMS. Figure 2 presents results on the possession of devices.

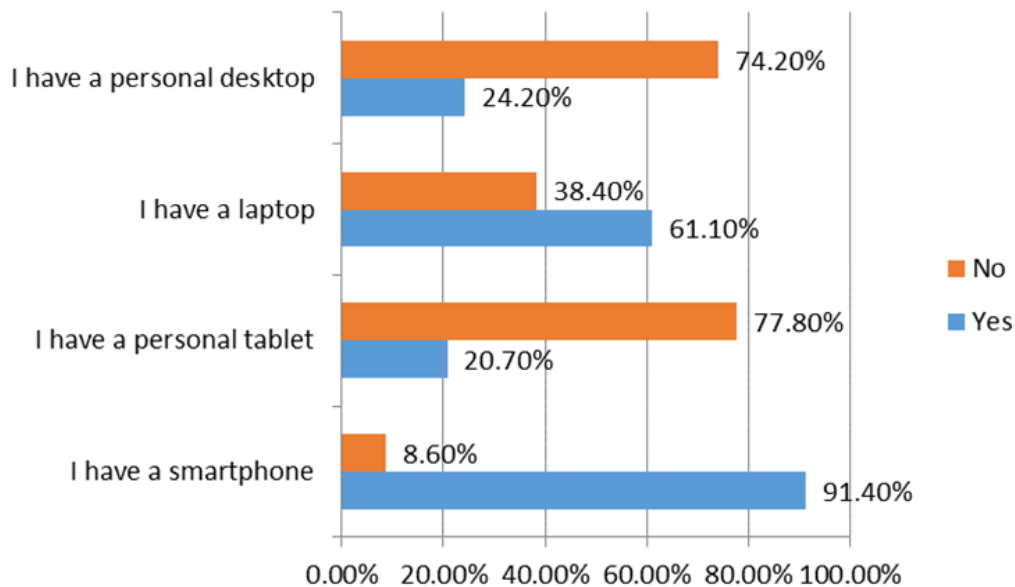


Figure-2. Respondents' possession of technological devices.

Almost all the students (91%) possessed smartphones. The majority of them (78%) did not have a personal tablet. This finding is consistent with views by other scholars that students in some disadvantaged rural universities found technologies expensive and unaffordable (Patel et al., 2017).

On the issue of laptop possession, the majority of the respondents (61.1%) indicated ownership of a laptop. However, about 74.2% did not own a personal desktop. This variation could be understood against the realisation

that students nowadays preferred ownership of handheld devices, which were easy to carry along and use (Kee and Samsudin, 2014).

3.3. Access to the Internet (Wi-Fi, Data, Computer Lab)

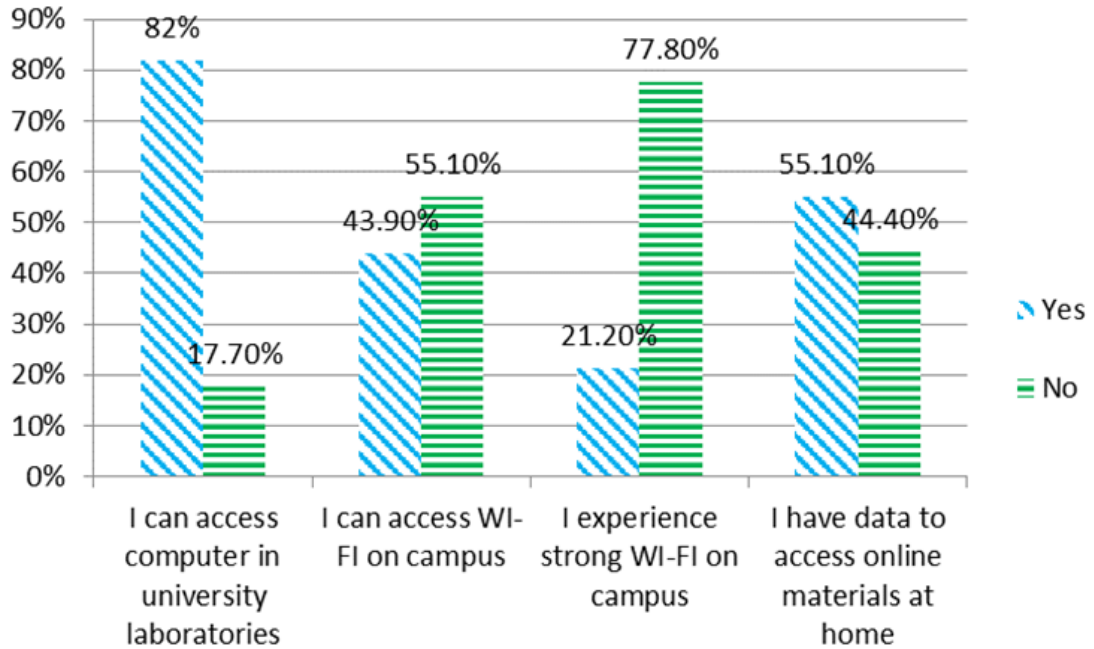


Figure-3. Access to the internet.

According to Figure 3, a majority of the students can access university computers, but not all of them were able to access WI-FI and its strength was weak. What was interesting is that slightly more than half of the students said they would have data to access online learning materials from home.

3.4. Support with the Use of Moodle

In this section respondents' views on support with Moodle LMS use are analysed.

Table-2. Student support with the Moodle LMS.

Item	% Agreed (A+SA)	Mean	Std dev.
I have technical support in Moodle LMS usage	27.2	2.83	1.016
I get assistance whenever I experience problems in using Moodle LMS	32.8	2.77	1.143

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

From the results presented in Table 2 it appears that the students seem not to be getting sufficient support to enable them to effectively use the LMS.

3.5. Perceived Usefulness

Respondents' views on perceived usefulness of the Moodle LMS are analysed, to establish if students perceived the LMS to be useful for their studies.

Table-3. Respondents views on perceived usefulness of Moodle LMS.

Items	% Agreed (A+SA)	Mean	Std. dev.
The use of Moodle helps improve the level of a student's performance	53.0	3.46	0.937
Using Moodle helps me obtain information faster and would enhance my study	62.1	3.55	0.971
Using Moodle makes easier for my study	51.6	3.34	0.971
I find the Moodle system is useful in my study	55.1	3.38	0.945
The use of Moodle allows me to access course learning materials easily	56.6	3.45	0.941

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

Table 3 shows that students were generally not agreeable that the Moodle LMS was useful for them. This is an indication of challenges associated with the use of the LMS which led to noncommittal responses on usefulness.

3.6. Perceived Ease of Use

The researchers also sought to establish students' views on perceived ease of use as a factor affecting the utilisation of the Moodle LMS. Analysis results are presented in Table 4.

Table-4. Respondents' views on perceived ease of use.

Items	% Agreed (A+SA)	Mean	Std. dev.
I find Moodle LMS easy to use	53.0	3.38	1.001
I feel time passes quickly while using the Moodle system	36.8	3.10	0.906
I find the Moodle system easy to get what I want it to do, for example, uploading files	45.4	3.10	0.906
I find the Moodle system friendly to use	54.1	3.40	0.960
I find it easy to download the course material from Moodle	50.0	3.34	1.008
I find it easy to participate in a discussion through Moodle	25.2	2.80	0.955

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

The students were almost neutral with the ease of using Moodle. This finding might be an indication that most of them were not using the LMS hence not certain if it was easy or not to use it. It could be attributed to the weak bandwidth since a majority (82%) of the students reported that they access computers but the internet is not strong.

3.7. Trust

The issue of trust of the LMS was also analysed in an attempt to establish respondents' views of trust as a factor affecting their utilisation of the LMS as presented in Table 5.

Table-5. Respondents' views on trust.

Items	% Agreed (A+SA)	Mean	Std. dev.
Moodle system has integrity	48.5	3.79	1.334
Moodle system installed at UNESWA is reliable	45.5	3.49	1.561
Moodle system installed at UNESWA is trustworthy	36.4	3.16	0.821

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

The factors of integrity, reliability and trustworthiness were asked to determine whether students trusted the Moodle LMS. Many students found the system to have integrity and reliable, but overall, they were neutral about it being trustworthy.

3.8. Satisfaction

The study also sought to establish the issue of satisfaction by analysing respondents' views regarding satisfaction with the Moodle LMS as a factor affecting their utilisation of the LMS. Table 6 presents results on satisfaction.

Table-6. Respondents' views on Satisfaction.

Items	% Agreed (A+SA)	Mean	Std. dev.
I am satisfied with my experience using the Moodle system	42.4	3.15	0.976
In general terms, I am satisfied with the way Moodle system process (uploading and downloading)	38.4	3.19	0.911

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

The results on Table 6 show that students were noncommittal on whether or not they were satisfied by their use of the Moodle LMS. This noncommittal response suggests some form of negativity in terms of satisfaction levels.

3.9. Usage of Moodle LMS

Table 7 presents results on respondents' views on their usage of the Moodle LMS.

Table-7. Respondents' views on the usage of Moodle LMS.

Items	% Agreed (A+SA)	Mean	Std. dev.
I have accessed learning the material on Moodle LMS	62.6	3.70	1.778
I have submitted assignments on Moodle LMS	53.5	3.28	1.933
I have communicated with my lecturer through Moodle LMS	35.4	2.49	1.907
I have communicated with my fellow students through Moodle LMS	22.2	1.95	1.673
I have viewed videos or animation through Moodle	8.6	1.40	1.136
I have downloaded and saved course learning materials from Moodle for later use	53.5	3.19	1.975

Key: Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1).

Results show that there was disagreement from respondents that they viewed videos or animation, or communicated with lecturers and fellow peers through the Moodle LMS. This disagreement shows there might have been no videos uploaded for students to watch or the students couldn't open them. It further indicates that the Moodle LMS was hardly used for communication purposes. There was also no strong agreement on respondents' use of the LMS to download material, which further shows minimal utilisation of the LMS. Overall, students' usage of Moodle seemed to be minimal.

3.10. Measurement of Relationship

In this section the researchers sought to relationship, if any, between the students' perceived ease of use, usefulness, trust and satisfaction and their usage of Moodle LMS through computing Pearson's correlation. The results are presented in Table 8.

Table-8. Measurement of relationship.

Factor	Usage
Trust	0.246**
Usefulness	0.356**
Ease of use	0.354**
Satisfaction	0.351**

Note: ** indicates significance at 0.01.

The results in Table 8 show that there was weak positive relationship between students' trust and usage; a moderate positive relationship between usage and the three variables of usefulness, ease of use and satisfaction. The usage of Moodle LMS by ODL students at UNESWA is moderately affected by their perceived usefulness and ease of use of the system as well as their satisfaction in using it. The positive relationship between students' trust in the system and usage is weak.

3.11. Challenges ODL Students Face in the Usage of the Moodle LMS

In this section, qualitative results are presented on challenges faced by students in the usage of the Moodle LMS.

Some students reported that they had never used Moodle LMS and therefore were not aware of any challenges with its usage. Some said "Never used it", "I am not a regular user" and "I do not have any challenges in using Moodle because there is nothing that I did use Moodle. I never used it". Yet another wrote, "I do not have enough time to use it". "I have not used Moodle it was not easy to access it out of school premises so I depended on my classmates who were able to access it".

Table-9. Students' views on challenges faced in Moodle LMS usage.

Thematic issue	Issues raised
Technological infrastructure	<ul style="list-style-type: none"> - Opening and closing hours not flexible for distance education students - Internet access challenges – unavailability, slow speed - High data costs - The inadequate number of computers
Technological support in LMS usage	<ul style="list-style-type: none"> - Problems with logging into Moodle LMS - Failure to download materials and no assistance offered. - Some lecturers not using Moodle LMS - Poor access outside campus
Training and orientation	<ul style="list-style-type: none"> - No training offered - Inadequate orientation
Limited use of LMS by course lecturers/tutors	<ul style="list-style-type: none"> • Some lecturers not using LMS • Unavailability of learning materials on Moodle • Instructors' unfamiliarity with Moodle • Promised learning materials not uploaded in time

Table 9 summarises some of the views of the students on the challenges they faced in the Moodle LMS usage, which are further elaborated by use of verbatim quotations from the participants.

3.11.1. Technological Infrastructure

On the issue of technological infrastructure, respondents indicated numerous challenges related to technological infrastructure, which negatively affected their utilisations of the Moodle LMS. Some of the statements by the respondents on this challenge were captured as follows:

- I am a part-time most of the times when I come to campus the computer laboratory start operating late and they close early which is an inconvenience for us distance students.
- Network problem makes it difficult to access Moodle always.
- I do not always access Moodle.
- Internet network is very slow.

It is clear from the excerpts above that students' utilisation of the Moodle LMS was affected by some key technological infrastructure issues.

3.11.2. Technological Support in LMS Usage

Respondents also indicated that they did not get adequate technological support in the Moodle LMS usage. The following excerpts from the participants serve to confirm the concerns:

- *I encounter problems when I want to Login to the computer.*
- *The steps to follow using Moodle are not clear.*
- *The changing password is a challenge you find that you have to renew your password yet the person to help you is not available on weekends.*
- *Updating of password should be also done on Saturday.*
- *Account expired and technicians failed to help.*

The revelation by respondents that they required technical support on the use of the Moodle LMS, which they never got is quite sad. Effective utilisation of LMS is only possible if technical support for users is provided physically or virtually all the time. Whenever users experience challenges there should be ways to assist them promptly. Absence of such support becomes frustrating for users and they may end up losing interest in technology use.

3.11.3. Training and Orientation

Some of the issues which negatively affected students' utilisation of the Moodle LMS were related to training and orientation. Some of the views of the respondents on this issue were recorded as follows:

- *We were not taught to how to use Moodle LMS.*
- *Not well trained.*
- *Not oriented on its usage so some of the students are not familiar with.*
- *I think we must equip us in using it.*

Students require adequate training and orientation on Moodle LMS usage for them to adopt it in teaching and learning. In cases where students are not adequately trained or oriented on technology use in learning, it results in serious challenges related to proper utilisation of the LMS.

3.11.4. Limited Use of LMS by Course Instructors

Some students who were able to access Moodle, complained of the underutilisation of the system by course instructors which disadvantaged them (students). In their own words, they wrote:

- *No challenges except the fact that there are no materials in Moodle lecturers do not post it.*
- *Lecturers not posting anything on the platform.*
- *Sometimes lecturers would promise to post study materials on Moodle but only to find that they do not.*
- *Only a few lecturers use it.*
- *Lecturers do not use Moodle. Only two have used it.*
- *Our lecturers are not familiar with Moodle so it disadvantages us.*
- *There is hardly any learning materials I find on Moodle.*
- *Few lecturers upload.*
- *Some lecturers have a problem installing learning materials.*
- *Lecturers do not use the platform.*
- *Lecturers do not upload materials.*
- *Work promised is not uploaded in time sometimes.*

The students were also asked, "*What changes or improvements you would like to see concerning Moodle LMS?*" They pointed out the need to improve the bandwidth, making it possible to access Moodle on campus as well as off-campus and equip both students and instructors on the use of the Moodle LMS. Illustrative excerpts are as follows:

- *Just encourage the lecturers to make use of it.*
- *Moodle should be fully utilised by all students and lecturers.*
- *I would like all lecturers to upload learning materials on the Moodle LMS.*
- *Lecturers should find Moodle LMS easy to use, get used to it. In other words, they should upload course materials. Fewer lecturers use Moodle approximately 1/3.*

Students would like the instructors to upload learning materials such as "*course outlines, notes, video lectures, and assignments*". They also stated that instructors should also "*allow students to submit their assignments through Moodle, and post marks on Moodle*". Students also suggested that and of semester results should be posted on Moodle and one student said: "*Results should appear in Moodle LMS when I have paid my fees to avoid leaving work to take my results*".

4. DISCUSSION

The study found that the majority of the students in the Institute under study had access to technological devices necessary for users to access the LMS. Most students owned handheld devices such as smartphones compared to desktop computers. This finding is consistent with the earlier finding by [Kee and Samsudin \(2014\)](#) who established that students preferred handled devices to desktop computers because handheld devices were easy to carry and to use. However, the study also found that even though students possessed handled devices, they were most smartphones and very few students had personal tablets. This finding is consistent with the finding by [Patel et al. \(2017\)](#) who found that in some disadvantaged universities technological gadgets were expensive and unaffordable to most students. Effective utilisation of LMS is only possible when students possess the required technological devices. Universities, therefore, should put in place measures to ensure that students have access to such devices on and off-campus.

The study identified personal and institutional factors that affected the usage of Moodle LMS by the ODL students. The use of the TAM helped identify personal factors and the question on challenges yielded data that brought up institutional factors which affect the usage of Moodle. Institutional factors included inadequate technological infrastructure such as low bandwidth which limited students' access to the internet and the Moodle LMS; insufficient students' training, orientation and support in terms of Login and usage of the system; and limited use of the LMS by instructors. These factors fall within the six dimensions (teachers, students, resources, technology, curriculum, and pedagogy) of factors that affect the use and adoption of technologies in distance learning identified by [Fung and Yuen \(2012\)](#). The participants voiced out the need for improved bandwidth at the Institute. Installing the system without ensuring that it is fully functional and students reap the desired benefits is not enough. According to [Leontyeva \(2018\)](#) institutional acceptance of e-learning is reflected by a strategic commitment among institutional leaders and the strategic goals give credence to planning and financial support of distance education. As such, the institute might need to address the issue of poor internet connectivity.

Course instructors should be trained and encouraged to use Moodle to manage course content, assess student performance and communicate with students on this platform. They should post the learning materials such as course outlines, lecture notes in PDF format, podcasts, screencasts and videos. A live Moodle course page will provide a virtual environment for valuable learning experiences for ODL students ([Leontyeva, 2018](#)).

The study also established that students' effective utilisation of the Moodle Learning Management System was negatively affected by a lack of technical support. Such a finding confirms findings in a similar study by

Adzharuddin and Ling (2013) which notes that students' perceived ease of use has a direct bearing on perceived usefulness of the LMS as informed by the Technology Acceptance Model (TAM). The existence of a reliable and readily available online technical support system ensures that students can troubleshoot any challenges they experience in the use of an LMS. This will lead to high levels of satisfaction.

The study further found that the issue of lack of technological infrastructure such as reliable and speedy internet bandwidth was a challenge to students. Grandon *et al.* (2005) observe that an effective online learning system depends upon the existence of the requisite technological infrastructure in an institution and of importance is the availability of reliable internet facilities. The issue of internet bandwidth becomes important if students are to download and upload material on the LMS without difficulties. A reliable internet facility also allows students to participate in discussion forums by posting and responding to discussion questions and hence enhance interaction with tutors and peers.

5. CONCLUSION

The study concludes that there were numerous institutional, systemic and personal factors which affected students' effective utilisation of the Moodle LMS. The factors were understood within the key tenets of the Technology Acceptance Model such as perceived usefulness, perceived ease of use, trust, and satisfaction.

6. RECOMMENDATIONS

Given the findings of the study, the following recommendations are made:

1. Almost all students had smartphones, the Institute/university has to address the issue of Internet availability and speed. Internet facility should be made strong and reliable through strengthening the bandwidth on campus and negotiating for an affordable student package with service providers.
2. The training of staff for enhanced Moodle LMS utilisation should be strengthened. Once staff are trained they should be encouraged and incentivised to make use of the LMS. Usage should not be restricted to uploading learning material but making use of the different and diverse function of the LMS such as discussion forums.
3. An online technical support service should be put in place to assist students to troubleshoot challenges related to online learning without delay.
4. There should be a continuous training and support service for distance learners to maximise their use of the LMS. Students should be incentivised on the use of the LMS to encourage use by all students.
5. Access to the Moodle LMS should not be limited to within the university as this defeats the very purpose of online learning which should allow learning flexibility in terms of time, pace and place.

REFERENCES

- Adzharuddin, N.A. and L.H. Ling, 2013. Learning management system (lms) among university students: Does it work. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 3(3): 248-252. Available at: <https://doi.org/10.7763/ijeeee.2013.v3.233>.
- Albidewi, I. and R. Tulb, 2014. Promise and challenge of e-learning-literature review. *European Scientific Journal*, 10: 210-217.
- Altun, A., Y. Gulbahar and O. Madran, 2008. Use of a content management system for blended learning: Perceptions of pre-service teachers. *Turkish Online Journal of Distance Education*, 9(4): 138-153.
- Bagozzi, R.P., F.D. Davis and P.R. Warshaw, 1992. Development and test of a theory of technological learning and usage. *Human Relations*, 45(7): 659-686. Available at: <https://doi.org/10.1177/001872679204500702>.

- Beatty, S.P., 2017. Effects of personal technology devices on instruction and learning in high school biology. D.Ed Thesis Murray, Kentucky: Murray State University.
- Bonk, C.J. and C.R. Graham, 2006. The handbook of blended learning. San Francisco, CA: Pfeiffer.
- Chang, C.L., 2008. Faculty perceptions and utilization of a learning management system in higher education. Unpublished doctoral dissertation, Ohio University, USA.
- Chaubey, A. and B. Bhattachary, 2015. Learning management system in higher education. *International Journal of Science Technology & Engineering*, 2(3): 158 – 162.
- Dabbagh, N. and B. Bannan-Ritland, 2005. Online learning: Concepts, strategies, and applications. Upper Saddle River, New Jersey: Pearson Prentice Hall.
- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3): 319-340. Available at: <https://doi.org/10.2307/249008>.
- Epping, R., 2010. Innovative use of blackboard® to assess laboratory skills. *Journal of Learning Design*, 3(3): 32-36. Available at: <https://doi.org/10.5204/jld.v3i3.60>.
- Fung, H. and A. Yuen, 2012. Factors affecting students' and teachers' use of LMS – Towards a holistic framework. In S.K.S. Cheung et al. (Eds.): *ICHL 2012, LNCS 7411, 2012*. Springer-Verlag Berlin Heidelberg 2012. pp: 306-316.
- Grandon, E.E., K. Alshare and O. Kwun, 2005. Factors influencing student intention to adopt online classes: A cross-cultural study. *Journal of Computing Sciences in Colleges*, 20(4): 46-56.
- Kasim, N.N.M. and F. Khalid, 2016. Choosing the right learning management system (lms) for the higher education institution context: A systematic review. *International Journal of Emerging Technologies in Learning (iJET)*, 11(06): 55-61. Available at: <https://doi.org/10.3991/ijet.v11i06.5644>.
- Kee, C.n.L. and Z. Samsudin, 2014. Mobile devices: Toys or learning tools for the 21st century teenagers? *Turkish Online Journal of Educational Technology*, 13(3): 107-122.
- Kljunic, J. and D.P. Vukovac, 2015. A survey on usage of Mobile Devices for learning among tertiary students in Croatia. *Central European Conference on Information and Intelligent Systems*. pp: 97-104.
- Leontyeva, I.A., 2018. Modern distance learning technologies in higher education: Introduction problems. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(10): 1-8. Available at: <https://doi.org/10.29333/ejmste/92284>.
- Macpherson, A., G. Homan and K. Wilkinson, 2006. The implementation and use of e-learning in the corporate university. *Journal of Workplace Learning*, 17(1/2): 33-48. Available at: <https://doi.org/10.1108/13665620510574441>.
- McAlister, A., 2009. Teaching the millennial generation. *American Music Teacher*, 59(1): 13-15.
- Moonsamy, D. and I. Govender, 2018. Use of blackboard learning management system: An empirical study of saff behavior at a South African University. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(7): 3069-3082. Available at: <https://doi.org/10.29333/ejmste/91623>.
- Obisat, A.F., H. Alrawashdeh, H. Altarawneh and M. Altarawneh, 2013. Factors affecting the adoption of e-learning: Jordanian universities case study. *Computer Engineering and Intelligent Systems*, 4(3): 32-39.
- Oliveira, P.C.d., C.J.C.d.A. Cunha and M.K. Nakayama, 2016. Learning management systems (lms) and e-learning management: An integrative review and research agenda. *JISTEM-Journal of Information Systems and Technology Management*, 13(2): 157-180. Available at: <https://doi.org/10.4301/s1807-177520160002000001>.
- Patel, N.M., A. Kadyamatimba and S. Madzvamuse, 2017. Investigating factors influencing the implementation of e-learning at rural-based universities. *Information Technology Journal*, 16(3): 101-113. Available at: <https://doi.org/10.3923/itj.2017.101.113>.
- Puspitasari, K.A. and B. Oetoyo, 2018. Successful students in an open and distance learning system. *Turkish Online Journal of Distance Education*, 19(2): 189-200. Available at: <https://doi.org/10.17718/tojde.415837>.

- Radwan, N.M., M.B. Senousy and M. Alaa El Din, 2014. Current trends and challenges of developing and evaluating learning management systems. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 4(5): 361-375. Available at: <https://doi.org/10.7763/ijeeee.2014.v4.351>.
- Raman, A., Y. Don, R. Khalid and M. Rizuan, 2014. Usage of learning management system (Moodle) among postgraduate students: UTAUT model. *Asian Social Science*, 10(14): 186-192.
- Renfro, A., 2012. Meet generation z. Meet generation Z. Getting Smart. Available from <http://gettingsmart.com/2012/12/meetgeneration-z/> [Accessed 5 August 2019].
- Sharma, A. and S. Vatta, 2013. Role of learning management systems in education. *International Journal of Advanced Research in Computer Science and Software Engineering*, 3(6): 997-1002.
- Smaldino, S.E., J.D. Russel, H. R. and M. Molenda, 2005. *Instructional technology and media for learning*. 8th Edn., New Jersey: Upper Saddle River.
- Srichanyachon, N., 2014. EFL learners' perceptions of using LMS. *Turkish Online Journal of Educational Technology-TOJET*, 13(4): 30-35.
- Sung, Y.-T., K.-E. Chang and T.-C. Liu, 2016. The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education*, 94: 252-275. Available at: <https://doi.org/10.1016/j.compedu.2015.11.008>.
- Suradi, Z., J.A.M. Baqwir and N.H. Yusoff, 2018. Factors affecting the use of moodle systems among students in Dhofar University. *Proceedings of 130th The IRES International Conference, Taipei, Taiwan, 26th – 27th July, 2018*.
- Swart, A.J., 2015. Student usage of a learning management system at an open distance learning institute: A case study in electrical engineering. *International Journal of Electrical Engineering Education*, 52(2): 142-154. Available at: <https://doi.org/10.1177/0020720915575925>.
- Vasant, S., 2015. Bring your own device – policy and practice in higher education. In A. Middleton (Ed.), *Smart Learning*. Sheffield, UK: Media-Enhanced Special Learning Interest Group and Sheffield Hallam University. pp: 64-71.
- Venkatesh, V. and F.D. Davis, 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2): 186-204. Available at: <https://doi.org/10.1287/mnsc.46.2.186.11926>.
- Walker, D.S., J.R. Lindner, T.P. Murphrey and K. Dooley, 2016. Learning management system usage. *Quarterly Review of Distance Education*, 17(2): 41-50.
- Westera, W., 2015. Reframing the role of educational media technologies. *Quarterly Review of Distance Education*, 16(2): 19–32.

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