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The Student Perspective on Usability of Learning Management System at University of Sri Jayewardenepura

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Introduction

In the knowledge era, many higher educational institutions have been able to integrate with Information Technology (IT) for distance educational purposes in terms of teaching and learning. E-learning is the use of IT in the course of teaching and learning. Basically, higher educational institutes are using E-learning services to fulfill three key objectives i.e. to develop their education systems; to meet the needs of their students; and to prepare the young generation for the challenges of future world (Hernandez et al., 2011). In the meantime, COVID-19 pandemic contributes to social isolation, but education will continue during the challenging era with the aid of technology.

E-Learning under the umbrella of technology has allowed the learning process (Zwain, 2019) to proceed throughout the lockdown process with the influence of COVID - 19. Today, Learning Management Systems (LMSs) are one of the most popular e-learning systems. Alias and Zainuddin (2005) describe LMS as a web-based technology developed to enhance the

learning process by properly preparing, implementing and evaluating by educational institutions. It is an integrated platform for educational materials. Thus, it is recognized as a successful e-learning method. Therefore, many higher educational institutes attempt to maintain their own customized LMSs to meet learning needs of undergraduates specially in distance education.

Numerous researches have been conducted to define problems and opportunities of e-learning systems in higher education institutions (Macpherson, Homan & Wilkinson, 2005; Agrawal *et al.*, 2016). Some research has found the learning effectiveness of using E-learning System outside Sri Lanka (Chen *et al.*, 2006; Khandelwal and Augustine, 2019). Many universities in Sri Lanka are encouraged to adopt LMS to facilitate open learning which provides higher degree of learner autonomy (Thuseethan, Achchuthan & Kuhanesan, 2015). However, adoption and adaption to Learning Management System (LMS) by Sri Lankan state universities is fairly poor (Padukkage, 2017; Samsudeen & Mohamed, 2019), thus, key objectives of e-learning services were rarely satisfied. As observed by the pilot study conducted (*pilot survey was conducted in March-April 2020*) to understand the present situation, undergraduates of the University of Sri Jayewardenepura are logging to LMS for their assignments which was at a rate of 70%. Fewer undergraduates are logging to LMS to access the reading materials (6.7%). Therefore, there is a vital need to identify what factors affect the usage of LMS in higher education. Therefore, the main purpose of this study is to examine the factors effect on usability of LMS by undergraduates in higher education. This study provides insights towards usability of LMSs in the higher education in Sri Lanka. Following is the conceptual framework based on relevant literature (Samsudeen & Mohamed, 2019; Salam *et al.*, 2020).

Conceptual Framework

This research intends to find out the influence of the following five determinants i.e. the quality of work life, expected success, expected effort, social effects, and conditions of facilitation on the usability of LMS. This study theoretically intends to combine two theories of Information Systems. Independent variables i.e. Quality of work life, Performance expectancy, and Social influence were taken from Technology Acceptance Model (TAM) (Padukkage, 2017; Samsuden & Mohamed, 2019). Independent variables i.e. Effort expectancy and Facilitating conditions were taken from Unified Theory of Acceptance and Use of Technology (UTAUT) (Salam et al, 2020).

‘Quality of work life’ means the belief or confidence that someone has, that their quality of work will improve by using a technology; in this case, the usability of LMS is intended to improve the learning process of students through saving them time and expense by accessing learning materials. ‘Performance expectancy’ is defined as the degree to which a person assumes, that using the system will allow him or her to achieve academic performance gains. ‘Effort expectancy’ is the degree to which a person believes he or she can use the technology without extra effort and how comfortably it is linked to the use of information systems. ‘Social influence’ is the degree to which individuals are affected using technology as they receive opinions from communities, relatives, and colleagues. The physical environment or environmental variables that convince a person to perform certain activities are the facilitating condition such as person assistance, usage instruction, the availability of materials to improve information and skills and e-learning framework accessibility. Usability is one way to evaluate effectiveness of e-learning systems including LMS. Usability refers how effectively users can use a tool or system to accomplish a task with

satisfaction and ease (Thuseethan, Achchuthan & Kuhanesan, 2015).

The following hypotheses are proposed for the study:

H₁: Work life quality has a significant effect on usability of LMS.

H₂: Performance expectancy has a significant effect on usability of LMS.

H₃: Effort expectancy has a significant effect on usability of LMS.

H₄: Social influence has a significant effect on usability of LMS.

H₅: Facilitating conditions have significant effect on usability of LMS.

Following framework conceptualized to illustrate the above cause-and-effect relationships.

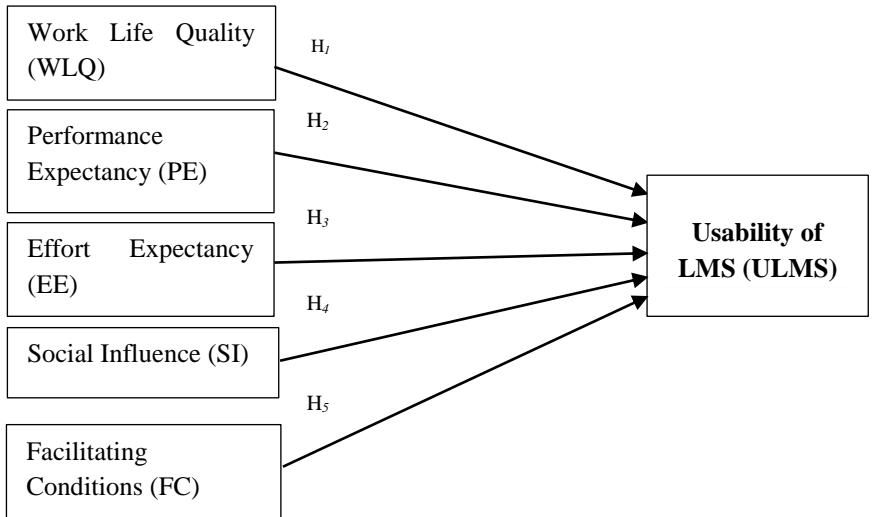


Figure 1: Conceptual Framework of the Study

Methodology

This study is a quantitative study based on a questionnaire survey. The relationships identified in the conceptual framework and allowing evidence to accept and reject hypotheses are well supported by quantitative method. Thus this explanatory research intends to test five hypotheses. Unit of analysis lies at the individual level. The FMSC actively and largely uses LMS for teaching and learning purposes to facilitate students due to its high intake. Therefore for convenience of the study, undergraduates of the Faculty of Management Studies and Commerce (FMSC) were involved.

The FMSC admits nearly 1200 undergraduates for the academic programme per year (UGC, 2019). Altogether the Faculty caters to a 4800 student population. Accordingly, the sample that was analyzed for the study would be 250 management undergraduates (Sekaran & Bougie, 2018, p.263). The convenient sampling technique was used when deciding the sample from the population (Samsudeen & Mohamed, 2019) due to time and resource limitations with the influence of COVID 19 outbreak. The same sampling technique was used in most TAM-related studies (Samsudeen & Mohamed, 2019; Tarhini et al, 2014; Ali and Raza, 2015a, 2015b; Ali et al. ,2015; Raza et al., 2015; Raza and Hanif, 2013). Further, convenience sampling allows researchers to control the resources required to carry out a survey. After careful treatment of missing data and exclusion of incomplete responses, 222 cases were retained for data analysis.

Table 1 summarizes the demographic profile and descriptive statistics of the respondents.

Table 1: Demographic profile and descriptive statistics of respondents

Items	Frequency	Percentage
Gender		
• Male	77	34.7
• Female	145	65.3
Year		
• First Year	9	4.1
• Second Year	57	25.7
• Third Year	27	12.2
• Fourth Year	129	58.1
First Time Learned		
• From orientation program prepared by the university	162	73.0
• During lectures	54	24.3
• Other	6	2.7
Logged LMS		
• Every day	11	5.0
• Before each lecture	16	7.2
• When possible	195	87.8
Easy to move LMS Page		
• Easy	139	62.6
• Medium	63	28.4
• Difficult	20	9.0
Difficulties in Submitting Assignments		
• Often	21	9.5
• Some-times	192	86.5
• Never	9	4.1

An electronic questionnaire containing of 37 items was made available as an online survey using Google Forms due to mandatory social isolation during COVID 19 outbreak. Web-form link was published in many WhatsApp groups and sent to Facebook messengers of many known undergraduates. The study's variables and measurement elements are based on existing literature scales. All the variables in the desired model; Work Life Quality-WLQ; Performance Expectancy-PE; Social Influence-SI; Effort Expectancy-EE; Facilitating Conditions-FC

and usability of LMS-ULMS were converted into measurable terms. The measurement scale ranges from 1 (Strongly Disagree) to 5 (Strongly Agree) with the neutral point of 3. Statistical software package SPSS version 16.0 is used to analyze the data.

Findings

Student perspective on usability of LMS is examined in this study in terms of the quality of work life, expected success, expected effort, social effects, and conditions of facilitation. As shown in *Table 2*, the KMO value of all the measurement items were greater than 0.50 (Hair et al., 2010). Further, the total variance explained of the measurement items were greater than 50%, indicating the appropriateness of the total variation in the items of respective factors. Finally, the measurement items were extracted into single component of respective variable. Thus, all the results highlighted the appropriateness of factor analysis. The Cronbach's alpha value should exceed the threshold of 0.70 for reliability and validity (Hair et al., 2010). The results in *Table 2* indicated that the alpha values were above the cut-off values, suggesting adequate reliability.

Table 2: Assessment of Measures

Variable	KMO	Bartlett's test	Total Variance	Cronbach's Alpha
WLQ	0.713	0.000	63.108%	0.800
SI	0.669	0.000	55.826%	0.734
PE	0.797	0.000	60.092%	0.831
EE	0.689	0.000	65.949%	0.733
FC	0.701	0.000	61.865%	0.791
ULMS	0.700	0.000	61.168%	0.787

The results in regression analysis showed that the variation in usability of LMS can be significantly explained by the Work Life Quality, Social Influence, Performance Expectancy, Effort Expectancy and Facilitating Conditions. As shown in *Table 3*, the p- value of the Work Life Quality, Social Influence, Performance Expectancy, Effort Expectancy and Facilitating Conditions were less than 0.05. Hence, these factors are significant determinants of usability of LMS among undergraduates of the University of Sri Jayewardenepura. Among the factors, ‘Work Life Quality’ recorded the highest beta value (beta= .147) and ‘Facilitating Conditions’ recorded the second highest value (beta=0.075). ‘Social Influence’ makes least effect on usability of LMS among undergraduates of the University of Sri Jayewardenepura (beta=.001) while ‘Performance Expectancy’ and ‘Effort Expectancy’ recorded beta values (beta= .055) and (beta .020) respectively.

Table 3: Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.044	.032		-1.377	.010
Work Life Quality	.147	.093	1.050	4.214	.000
Social Influence	.001	.011	.001	3.063	.020
Performance Expectancy	.055	.014	.044	2.955	.000
Effort Expectancy	.020	.012	.018	1.683	.034
Facilitating Conditions	.075	.094	.075	2.797	.006

The overall results of the multiple regression analysis and the study hypotheses are presented in *Table 4*.

Table 4: Regression Result Summary

Hypothesis	P -value	Result
H1	.000	Supported
H2	.020	Supported
H3	.000	Supported
H4	.034	Supported
H5	.006	Supported

Discussion and Implications

Data analysis of the current study shows that there is a positive significant relationship between work life quality and usability of LMS while having the highest beta value (beta= .147). This finding is consistent with the previous research studies (Ali et al. 2018; Samsudeen and Mohamed, 2019). Undergraduates can save their time and money in case of daily travelling when their usability of LMS enhanced. They can invest more time on studying and the university can encourage more student centered learning activities for evaluations. This will be very useful for students who engage with internships. These students always complain about their continuous stress during academic activities. Adoption and adaption to e-learning system would successfully ensure some leisure time for students and will reduce their anxiety. This will ensure a peaceful mind for learning activities. Further, they can avoid wastage of money for photocopies and the faculty can create a sustainable class room facilitated with paperless work. Overall quality of learning activities would be improved with the influence of technology. In case of management undergraduates, they can become more familiar with technology which is a compulsory demand of future job markets. Findings of the current study discovered the positive significant relationship between facilitation conditions and usability of LMS having second highest beta value (beta= .075). The past literature indicates that the level of acceptance of e-learning is positively

influenced by conditions that promote it (Salam *et al.*, 2020; Bakar *et al.*, 2013). The most important factor is promoting conditions, as the researcher said, because improving the technological infrastructure, such as adding more Wi-Fi access points inside the campus, will increase the usage of the e-learning system. It can also promote the use of the e-learning scheme by making arrangements to include loan-based smartphones and tablets. According to Samsudeen and Mohamed, (2019), lecturers should persuade students to use e-learning system. Enhancement of student's knowledge about LMS (pre-learning) through different learning activities is highly concerned in this regard.

The positive significant relationship between Performance Expectancy and usability of LMS was observed in the current study (beta= .055). (Salam *et al.*; 2020; Samsudeen and Mohamed, 2019) proves that the expectation of students that using LMS would enhance their achievement, would allow them to easily embrace its use. Free access to course materials provides equal learning opportunities for all students which they equally participate for academic excellence. Sometimes students quickly distract and discontinue from the learning process after a few times. In such case if few lectures were conducted online and recordings made available, they can quickly recall facts by rewinding and can easily make notes. They can quickly access course materials at any location. Therefore, productivity of the student will be enhanced and they may feel at ease in understanding course contents of descriptive subjects. The Faculty can craft a strategy to link performance enhancement and use of LMS. For an example, making a case study available on LMS that will be tested at the examination or uploading a similar statistical problem that will be tested at the examination. This

motivates students to have a continuous touch with LMS and enhance their knowledge and skills.

The positive significant relationship between Effort Expectancy and usability of LMS was observed in the current study (beta=.020). Samsudeen and Mohamed, (2019) revealed that among five factors, Effort expectancy contributed the most to use the e-learning system. Yoo *et al.*(2012) revealed that the Effort Expectancy which is considered an intrinsic factor is the most influential variable of the UTAUT model, as it is the amount of effort a person perceives to invest in using a technology that is usually low due to the user-friendly nature of information technology (Decman, 2015). Tireless effort of using LMS would encourage more students' interactions. In this context, students believe that they have to incur some extra effort when logging to LMS. The Faculty can facilitate students with more sophisticated and user-friendly versions of LMS. Further, the faculty can initiate an activity that would encourage students to use the mobile app that suggests the ease of use of LMS. Findings reveal that impact of effort expectancy is considerably low even when the use of LMS has become a deadlock which critical attention required.

Social Influence makes least effect on usability of LMS among undergraduates of the University of Sri Jayewardenepura (beta=.001). Researchers have discovered a clear correlation between Social Influence and a person's Behavioral Intention with respect to the use of technology (Gruzd *et al.*, 2012; Gupta *et al.*, 2008; Venkatesh *et al.*, 2003). Lecturers', colleagues', administration and university perception to motivate students using LMS are really weak as discovered. According to Samsudeen and Mohamed, (2019), lecturers should persuade students to use e- learning system, and, undergraduates should be

encouraged to motivate their colleagues to use e-learning system. The whole university system has a collective responsibility to ensure a long term strategy to equip students mentally and socially capable enough to use LMS for teaching and learning activities.

Conclusion

Adoption as well as adaption to LMS is increasing demand of higher education in Sri Lanka (Padukkage, 2017). Dialogue in e-learning within the university system is a hot topic at present than ever before. The reason is that, Sri Lankan state universities had to deviate from the conventional pattern of teaching and learning with the influence of the COVID 19 pandemic. In this context, there was a forced attempt for state universities to adopt and adapt to techniques used in distance education such as Learning Management Systems. Therefore, student perception on usability of LMS is required to examine in order to position LMS more effectively within the university system. However, handfuls of researches have been conducted on student perception of LMSs within higher education sector. Specially, status of student perspective on LMS in the context of the FMSC, University of Sri Jayewardenepura is not really known. Therefore in a holistic view, influence of determinants such as Work Life Quality, Performance Expectancy, Social Influence, Effort Expectancy, and Facilitating Conditions on usability of LMS from the stand point of students remain unknown until revealing from this study. It is undeniable that these determinants play significant roles on their usability of LMS. Thus, this study successfully provides empirical evidence regarding student perspective that would significantly contribute towards usability of LMSs. The research concludes with the recommendation to adopt blended learning techniques for an effective course delivery even after

the new-normal ends as far as possible concerning the best interest of the students.

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