MENTOR| The Journal of Business Studies
Faculty of Commerce and Management, Eastern University, Sri Lanka
JBS

Exploring the critical factors influencing the student satisfaction in online learning during the COVID-19 pandemic *(With special reference to Faculty of Commerce and Management, Eastern University, Sri Lanka)*

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ABSTRACT

The COVID-19 pandemic has interrupted the usual functioning of several activities across the world, including education and learning. Sri Lankan education system made a notable change to the online education system after shutting its physical classes in universities due to the COVID-19 pandemic. As per the Asian Development Bank survey, approximately 90% of undergraduate students were able to attend online education in the end of September 2020. The transformation towards online education during the COVID-19 pandemic has driven numerous scholars' attention to online learning, however, there is still a lack of studies available in Sri Lankan context. To fill the existing empirical knowledge gap this survey was conducted to examine the critical factors influencing on student's satisfaction in online learning. The quantitative study was conducted based on primary data which were collected among 306 undergraduate students in a selected Sri Lankan State University by using an electronic questionnaire. The results of this study revealed that instructor quality, perceived usefulness and ease of use, and course delivery have a significant impact on students' satisfaction in online learning. At the same time, interaction and technology factors do not have a significant impact on students' satisfaction in online learning. Consequently, these research findings have provided some noteworthy contributions to educators and policymakers to identify and understand the factors which will increase student's satisfaction in online learning.

Keywords: COVID-19, online learning, student satisfaction, technology

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1. Introduction

Education is a crucial tool for human capital development so far. It is a powerful weapon to change positively and improve one's entire life. Education is the counterpart of all innovations of the world. Every country in the world provides priority for education because it is important for economic and human capital development. In Sri Lanka, since 1945 the government provides it's enough contribution to education through the free education system, which reveals how much importance they place on education. From 2019, the world's education system was interrupted due to the COVID-19 pandemic. In worldwide, nearly 1.6 billion students were affected in more than 200 countries (Di Pietro et al., 2020). The Governments of all countries have implemented various policies and strict rules, such as quarantine policies, isolation, social and physical distancing, health and safety rules, and large-scale social restrictions according to anticipating the transmission of the virus. This situation necessitates its citizens to stay at home, work at home, and study at home (Jamaluddin, Yuen Wah, & Abu Taher, 2021). Especially, in underdeveloped and developing countries nearly 99 percent of schools and other learning institutions were impacted during the pandemic situations (Di Pietro et al., 2020; Jamaluddin et al., 2021). COVID-19 pandemic has given challenges to educational bodies, particularly higher educations. According to the Department of Census and Statistics Report 2019, currently, 100,944 undergraduates are studying in Sri Lankan state Universities, their learning activities have been disrupted due to the closure of the state Universities. All universities in Sri Lanka and even throughout the world are required to implement Technological solutions to be used as an online learning media (Irfan et al., 2020).

The temporary shutdown of Government Universities during the COVID-19 pandemic has abruptly transformed the Sri Lankan educational system in favor of online learning. This radical move flow in the use of different technological platforms and applications, including digital learning management systems (LMS), collaboration platforms for live-video communication (ZOOM), and massive open online courses (MOOCs) (Hayashi et al., 2020). In Sri Lanka, The Government made an agreement between the University Grants Commission (UGC) and Telecommunications Regulatory Commission of Sri Lanka (TRCSL) in order to provide free Internet access to state university servers during the pandemic situation. The results of this agreement all Internet Service Providers in Sri Lanka to supply free access for University learning management systems (LMS) and remote learning facilities through the Lanka Education and Research Network (LEARN) (Hayashi et al., 2020). Both students and academic staff vastly benefited through this free network access. Based on the LEARN Report, as of 23rd of August 2020, 13 million activities (e.g., accessing reading materials, following lecture slides, attending quizzes) using LMSs were launched in a peak week during the month of May. For synchronous teaching and learning using LEARN's video conferencing solution, nearly 540,000 users in total were recorded per week in the month of July (Hayashi et al., 2020).

Eastern University, Sri Lanka (EUSL) is one of the state Universities in Sri Lanka located in the Batticaloa district. The Faculty of Commerce and Management (FCM) had been implementing the learning management

systems (LMS) as an online learning system in small phases since before the COVID-19 pandemic. 12th of March 2020, the Sri Lankan Government imposed the island wide lockdown, all 15 state universities, 40 other state, and non-state tertiary education institutions were closed due to a government order. Throughout the world, students and lecturers were inconvenienced as they continued their educational activities via online without any pre-arrangement, and many university academic staff were caught unprepared for the transition (Uppal, Ali, & Gulliver, 2018) and especially it is a challenge to persuade the university students to adopt a new model who previously belonged to conventional face to face mode of learning. Eastern University is no exception for this, therefore it was also forced to pursue its entire academic activities via online. At the time of this paper writing (15th of January 2021), Sri Lanka has documented 774 confirmed new COVID-19 cases and 380 deaths caused by the Coronavirus. Governments strive to maintain people from congregating and ensure a secure distance between them. This has had a significant influence on the education system, substantially impeding its operations. As a result, educational activities must be restarted under the measures made to prevent the spread of the virus. Since the COVID-19 pandemic is spreading, regular educational activities are no longer possible. As a result, through the online education system, education has already begun in universities and schools. Since the closure of physical classroom activities in state Universities, the Faculty of Commerce and Management of EUSL has been continuously pursuing its two semester's academic activities via online for almost a year but still, they didn't conduct the survey based on the student's satisfaction. Universities have to confirm that whether this online learning approach was successful among the students. One of the key factors of online learning implementation's success is student satisfaction, increasing the student's satisfaction will help to continue the degree programmes without any interruption during this pandemic. According to DeLone and McLean, (1992) indicated that the information system research clearly explains that student's satisfaction is one of the most vital factors in assessing the success of online learning system implementation. Still, there are very few studies have been conducted among the Sri Lankan Universities to measure student's satisfaction in online learning during the pandemic and there are empirical knowledge gaps that exist in this research area.

Hence, this study was conducted to address the empirical knowledge gap regarding the level of student's satisfaction on online learning and the key factors of the undergraduate's online learning satisfaction of FCM, EUSL. University administration must focus on the student's satisfaction to sidestep the failure and implementation loss of online learning. This study noticeably sets the path for all Sri Lankan universities to successfully implement the online learning system with a high level of student's satisfaction. This study considered two main objectives. The first objective is to identify the level of student's satisfaction in online learning, and the second is to identify the most influential factors on student's satisfaction in FCM, EUSL.

Thus, this paper tries to achieve the above-mentioned two objectives systematically. The rest of this paper is organized in support of the related literature, study methodology, results, discussion, and conclusion, the contribution of the study, recommendations, and its limitations of the study.

2. Literature Review

A literature review is an evaluative report of evidence found in the previous researches related to the selected area of study. In this part, researchers aim to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to the study topic. It examines varying views, thoughts, controversial arguments, past research findings, and theoretical arguments applicable to this study. There are many factors influencing student's satisfaction in online learning. In considering the scope of the current study, it has covered only five key factors which are heavily influencing student's satisfaction in online learning. They are instructor quality, perceived usefulness and ease of use, course delivery, technology, and interaction.

2.1 Instructor Quality

To determine the effectiveness of student's behaviour in online learning, instructor quality is considered an essential factor in system evaluation (Dillon & Ahlberg, 2006; Sun et al., 2008; Arbaugh, 2002). They indicated that online learning student's satisfaction is expected to be improving when instructors effectively involve and react to the student's problems immediately. This view was repeated by Kim, Hong, and Song (2019) who tracked down that online learning instructor help is essential in increasing student's satisfaction, learning standard, and confidence. As indicated by Weinstein (2000), e-learning instructors ought to have four capabilities: understanding student's learning, instructional abilities, individual skills, and computer-based skills.

Many researches indicated that student's satisfaction depends on many factors that related to the instructor such as teacher-friendly teaching approach, understandability of students issues, clear knowledge in IT, and influence of connection between students (Volery & Lord, 2000; Arbaugh & Duray, 2002; Chickering & Gamson, 1987; Hayashi et al., 2004; Thurmond et al., 2002, Opatha, 2020). In online learning, instructor plays a vital role because his/her method of guidance gets the students consideration towards subject and learning (Collis, 1991; Willis, 1994). Webster and Hackley, (1997) mentioned that instructor's teaching method, his/her attitude towards conveying lectures in a cordial way and giving quality of content are influenced to the student's satisfaction and acceptance of online learning.

Teachers' attitudes towards e-learning are also impacting students' satisfaction in online learning. Students encourage to continue their online learning activities when students get timely responses from instructors because they are facing many problems in online learning (Sun et al., 2008). Soon et al (2000) stated that there is a negative impact when teachers neglect to react to learners' issues in time. Based on the above empirical evidence and discussion, the first hypothesis of the study is developed as follows:

H_1: *Instructor Quality will positively influence on student's satisfaction in online learning.*

2.2 Perceived Usefulness and Ease of Use

Student perceived usefulness in an online learning framework is characterized as the view of levels of progress in learning impacts due to the selection of such a framework. Perceived ease of use in an online learning framework is students' view of the simplicity of receiving an online learning framework. Perceived usefulness is how much an individual accepts that utilizing a specific technology would upgrade their work execution (Davis, 1989).

In the educational setting, an online learning framework with a high degree of perceived usefulness is one for which a client accepts that there is a positive user execution relationship. This proposes that when learners perceive online learning to be valuable in gaining the ideal skills and knowledge, they are bound to utilize e-learning in their learning interaction. Research has shown that perceived usefulness positively affects learners' aim to utilize a specific system (Luan & Teo 2009; Venkatesh & Davis, 2000).

In online learning, students' perceived usefulness is connected emphatically with their degree of satisfaction (Sun et al., 2008). Davis (1989) indicated that perceived ease of use is how much an individual accepts that utilizing a specific technology would be free from effort. Moreover, when students see an internet learning framework as simple to utilize, almost certainly, they will be satisfied and happy with the e-learning system (Hermans, Haytko, & Mott-Stenerson, 2009; Sun et al., 2008). Lee (2010) found that when students believe an online learning framework to be not difficult to utilize, they committed more opportunities to learn the substance, consequently prompting a more significant level of satisfaction. Based on the above empirical evidence and discussion, the second hypothesis of the study is developed as follows:

H2: *Perceived usefulness and ease of use will positively influence on student's satisfaction in online learning.*

2.3 Course Delivery

Online learning has taken out the boundary of face-to-face class participation. The most alluring character of online learning as per learner and instructor both is its flexibility of place and time. Communication was the principal issue for learners in conventional classes. Online learning accompanies new virtual (anyplace, whenever, wherever) class ideas (Arbaugh, 2000). This is more attractive for individuals who are at work and need to proceed with their studies (Arbaugh & Duray, 2002).

The adaptable idea of web-based learning climate increase student satisfaction. Learner's satisfaction is impacted by online learning course adaptability. While thinking about the execution of any new climate, the degree of quality considers as a first factor. Course content quality is the essential characteristic that leads towards learner's satisfaction and effective execution of online learning (Piccoli, Ahmad, & Ives, 2001). Online learning courses' adaptability on schedule, place, and methods, participation and satisfaction of online learning students are encouraged (Arbaugh, 2002; Arbaugh, 2000; Berger, 1999; Leidner & Jarvenpaa, 1995).

Moreover, the removal of face-to-face barriers empowers more unique interaction that promotes the foundation of constructive learning and chances for cooperative learning (Brandon & Hollingshead, 1999; Salmon, 2000). In addition, it virtually wipes out awkwardness related with face-to-face interaction in conventional classrooms. Presently, most e-learning courses are in free learning and proceeded studies, lectures and students are generally individuals at work (Arbaugh & Duray, 2002; Ellram & Easton, 1999). Under the useful or agreeable learning model, intuitive correspondences and media support given by IT can assist students with creating level reasoning models and setting up theoretical information (Leidner & Jarvenpaa, 1995).

The virtual qualities of online learning, including online intuitive conversation and brainstorming, media introduction for course materials, and organizing the learning process, help students in building up learning models adequately and encouraging persistent web-based learning (Piccoli et al., 2001). Based on the above empirical evidence and discussion, the third hypothesis of the study is developed as follows:

H3: *Course delivery will positively influence on student's satisfaction in online learning.*

2.4 Technology

Students felt that their lack of computer skills interrupt the method of using the online learning platform effectively (Nambiar, 2020). Learning through online includes various instruments like text-based chat, audio, video conferencing (zoom), and LMS. Webster and Hackley, (1997) stated that quality of technical characteristics is essential to be excellent in order to achieve successful execution and learner's satisfaction towards online learning. The utilization of web-based tools relies absolutely upon high-speed internet. The network transmission speed of web data from servers impacts student satisfaction. At the point when learners do not confront any login and logout issue, with proceeding with association with instructor their satisfaction will be improved.

Many scholars stated that technology quality and Internet quality significantly influence fulfillment in online learning (Piccoli et al., 2001; Webster & Hackley, 1997). A product apparatus with easy-to-understand attributes, like learning and remembering not many basic thoughts and significant keywords, requests little exertion from its users. Students will actually want to embrace such an apparatus with few hindrances and satisfaction will be improved (Amoroso & Cheney, 1991; Rivard, 1987). Also, previous studies embraced by Webster and Hackley, (1997) considered learning consequences for the technology-mediated online learning of 247 students. The meaning of technology quality is its students' apparent nature applied in online learning (like microphones, earphones, electronic blackboards, etc.). The definition for Internet quality is network quality as seen by students. Based on the above empirical evidences and discussion, the fourth hypothesis of the study is developed as follows:

H4: *Technology will positively influence on student's satisfaction in online learning.*

2.5 Interaction

Students are less externally inspired to participate in learning exercises due to the closure of physical educational institution and the absence of in-person interaction (Nambiar, 2020). In the present learning settings, gathering and peer learning is a typical practice that has been appeared to raise the perception of learning (Alavi, 1994). Therefore, many research works have affirmed the role of amiability and the significance of interaction in learning practices (Eom & Ashill, 2016). However, in spite of this acknowledgment, uneven and differential involvement in group learning stays an issue. While clear reasons for this may incorporate reserve or self-presentational predispositions, the teacher's capacity to utilize strategies that inspire learners to take part in group learning is a significant factor (Anderson, 2008; Richardson & Long, 2003; Nambiar, 2020). Arbaugh (2000) indicated that the more students perceive interaction with others, the higher the online learning satisfaction. In a virtual learning setting, collaborations among students and others or course materials can help tackle issues and improve progress. Piccoli et al. (2001) stated that interacting electronically could increase the learning effort. Numerous scholars accept that the interactive instructional method is a fundamental factor for learning satisfaction and achievement (Hong, 2002; Jiang & Ting, 1998; Nahl, 1993; Schwartz, 1995).

According to Moore (1989), there are three sorts of interactions in learning exercises: learners with instructors, learners with materials, learners with learners. Teaching methods, particularly collaborations among teachers and students, assume a definitive part in learning exercises (Borbely, 1994; Lachem, Mitchell, & Atkinson, 1994; Webster & Hackley, 1997). Without conspicuous interactions between teachers and students, learners are more prone to distractions and difficulty concentrating on the course materials (Isaacs et al., 1995). Because e-learning can proceed in virtually any place, it requires better concentration than in traditional face-to-face interactions (Kydd & Ferry, 1994).

Interaction mechanisms in e-learning environments should be properly designed to improve the frequency, quality, and promptness of interactions which could affect learner satisfaction. Without prominent interaction among instructors and learners, students are more inclined to interruptions and trouble focusing on the course materials (Isaacs, Morris, Rodriguez, & Tang, 1995).

Since online learning can continue in virtually any spot, it necessitates better consideration than conventional face-to-face interaction (Kydd & Ferry, 1994). Interaction settings in online learning conditions ought to be appropriately intended to improve the frequency, quality, and speediness of connections which could influence student satisfaction. Based on the above empirical evidence and discussion, the fifth hypothesis of the study is developed as follows:

H5: *Interaction will positively influence on student's satisfaction in online learning.*

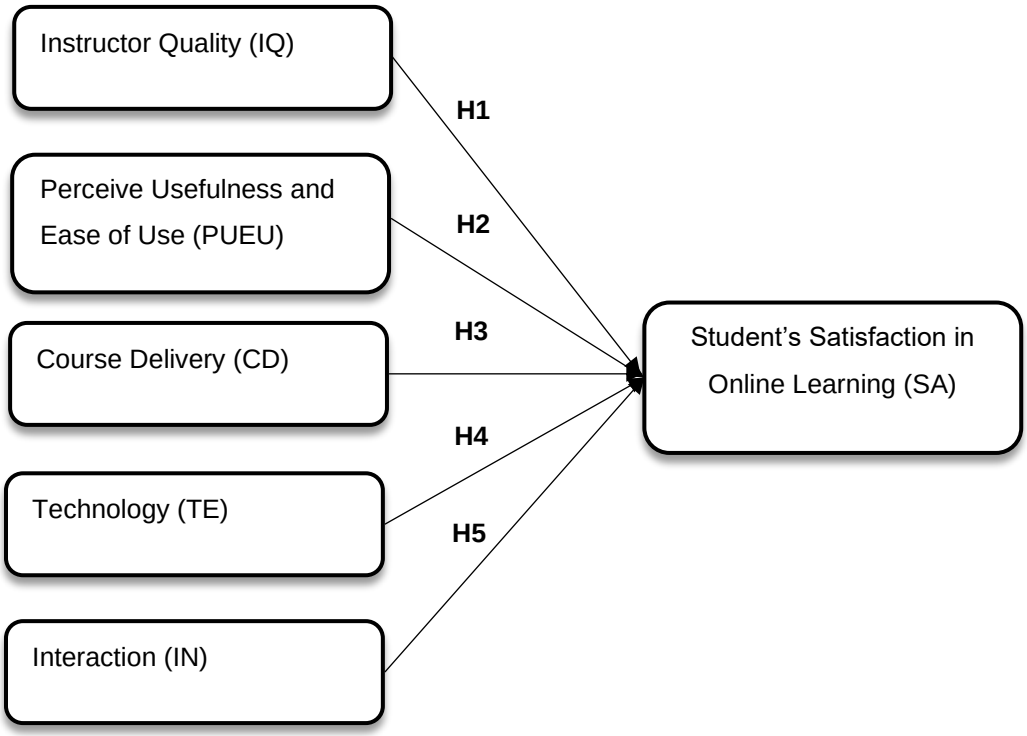

Figure 1: Conceptual Framework

(Source: Developed by researchers)

3. Methodology

3.1 Sample and Data Collection

This study used quantitative research approaches. A convenient sampling method was applied as the sampling technique for the study due to the COVID-19 pandemic. It is the most effective method to conduct this sort of survey study during the pandemic period. The data were collected from 306 undergraduate students of the Faculty of Commerce and Management, Eastern University Sri Lanka. Due to the current COVID-19 situation, the survey was conducted through online using Google forms. The form was made available online on the 2nd of February 2021 for 4 weeks. Undergraduate students from the Faculty of Commerce and Management, Eastern University Sri Lanka were approached and requested to complete this survey. Within these 306 undergraduate students, 74 students were first year, 70 students were second year, 108 students were third year, and 54 students were final year. They participate in this survey.

3.2 Measures

The scholars gather primary research data through an online questionnaire. The survey questions assessed the general perception and experience of undergraduate students about online learning. This online questionnaire consists of 6 demographic questions and 30 survey questions on the six variables such as

'instructor quality', 'perceived usefulness and ease of use', 'course delivery', 'technology', 'interaction', and 'satisfaction'. The last question in the online questionnaire provides an opportunity to gather student's opinions through open-ended questions by focusing on challenges and problems of online learning. The variables in the research were measured through questionnaires with a five-point Likert scale, ranging from "1= strongly disagree" to "5 = strongly agree" and a nominal scale which was filled by the respondents themselves appropriately as they perceived response to each and every question. The question items for this study were adapted from previously validated questionnaires in published studies with participants drawn from educational settings (Arbaugh, 2000; Thurmond et al., 2002; Teo & Wong, 2013).

3.3 Data Analyzing Technique

To achieve the first objective, univariate analysis and mean estimation techniques are applied to explore the level of study variables. In the descriptive analysis mean value range from 1.00 to 2.5 is considered as low level, above 2.5 to 3.5 is considered as a moderate level and above 3.5 to 5 is considered as high level. Multiple linear regression was used to measure the impact of the independent variable on a dependent variable. In the regression analysis, coefficient (represented by R2) can be taken on any value between 0 and 1 (Boone & Boone, 2012). It measures how much the dependent variable varies with an independent variable when all other independent variables are held constant. Therefore, multiple linear regression was used to achieve the second objective. This study has used Statistical Package for the Social Sciences Version 22 (SPSS v.22) for the statistical analysis.

4. Findings and Discussion

4.1 Sample Profile

The sample consisted of 306 undergraduate students who were enrolled in an online learning in the Faculty of Commerce and Management, Eastern University, Sri Lanka when the data were collected. There were 128 male students and 178 female students. The majority of the participants (35.4%) were in the third year and the minority of participants (17.7%) were in the final year, respectively 24 and 22.9 percentages of the first year and second year students were responded to this survey. Among the 306 respondents, 193 respondents were Management Department and 113 respondents were Commerce Department. According to the survey, data 65.3% of the students use smartphones for their online learning, 28.8% of students use laptops, and the remaining 5.9% of students use tap for their online learning. Based on the respondent's Provinces 126 students response from the Eastern Province, 42 students from the central province, 25 students from Northern Province, 33 students from North Western, 7 students from Southern Province, 26 Students from Uva Province, 15 students from North Central province, 6 from Sabaragamuwa Province, 26 students from Western Province.

4.2 Reliability Analysis

The Cronbach's Alpha value was used to measure the reliability of the variables. According to this study reliability analysis of Cronbach's Alpha Coefficient for the instructor quality is 0.864, perceived usefulness and ease is 0.918, course delivery is 0.806, technology is 0.702, interaction is 0.975 and satisfaction is 0.919. When the Cronbach's Alpha Coefficient value is above 0.7 it is considered as a good reliable instrument. So it is indicated that all items considered in this study are to be acceptable.

Table 1. Descriptive Statistics

Variable	**Mean**	**Standard Deviation**
Instructor quality	3.53	0.65
Perceived usefulness and ease of use	3.29	0.76
Course delivery	3.59	0.66
Technology	2.32	0.40
Interaction	2.43	0.49
Satisfaction	3.35	0.70
(1.0 ≤ X ≤ 2.5→Low level), (2.5 < X ≤ 3.5→Moderate level), & (3.5 < X ≤ 5.0→High level)		

(Source: Survey Data)

According to Table 1 descriptive statistics result shows that the instructor quality and course delivery had high levels, Perceived usefulness, and ease of use had a moderate level of contribution. Technology and interaction had low levels and student's satisfaction in online learning was also at a moderate level.

4.3 Regression Analysis

Multiple linear regression was used to identify the most influential factors of student's online learning satisfaction. In order to check the influential factor, regression analysis was used to analyze the impact of instructor quality, perceived usefulness and ease of use, course delivery, technology, and interaction on student's online learning satisfaction.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.854[a]	.729	.724	.37088

a. Predictors: (Constant), IN, TE, CD, IQ, PU

(Source: Survey Data)

Table 3. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.270	.203		1.332	.184
IQ	.173	.050	.160	3.489	.001
PU	.531	.052	.573	10.198	.000
CD	.195	.052	.184	3.749	.000
TE	.001	.052	.000	.012	.990
IN	.008	.043	.006	.196	.845

a. Dependent Variable: SA

(Source: Survey Data)

According to Tables 2 and 3, the coefficient of multiple correlations is a measure of how well a given variable can be predicted using a linear function of a set of check variables. It is the correlation between the variable's values and the best predictions that can be calculated linearly from the predictive variables. In this study, the higher value (R = 0.854) indicates higher predictability of the dependent variable (student's satisfaction in online learning) from the independent variables (instructor quality, perceived usefulness, and ease of use, course delivery, technology, and interaction). The R square at 0.729, which implies that 72.9% of the variability in online learning satisfaction is accounted by all independent variables (IN, TE, CD, IQ, and PUEU). In other words, 27.1% of the variance of online learning satisfaction is affected by other variables which are not considered in this study. Based on the results instructor quality (t= 3.489, β= 0.173, Sig. <0.001) had a statistically significant and positive impact on student's satisfaction in online learning. Hence, researchers can conclude that H1 was supported. The same result was found by Eom, Wen, and Ashill, (2006); Teo and Wong (2013). At the same time, perceived usefulness and ease of use (t=10.198, β= 0.531, Sig. <0.000) and course delivery (t=3.749, β= 0.195, Sig. <0.000) had statistically significant and positive impact on student's

satisfaction in online learning. Consequently, researchers can conclude that H2 and H3 were also supported. The same result was found by Eom, Wen, and Ashill, (2006); Teo and Wong (2013).

Technology (t= 0.001, β= 0.012, Sig. >0.99) had no statistically significant impact on SA. However, this study can conclude that H4 was not supported. It may prove through open-ended question responses because many students mentioned their technology-related problems. Below statements assure that such as, “network interruption”, “frequent Electricity/Power drop”, “lack of IT skills”, “spending more money to data connection”, “longtime lectures will affect the eyes”, “lack of device like laptop and tap”, and “laptop will heat when I am using zoom”. The same result was found by Uppal et al. (2018) and Bahasoan et al. (2020).

Interaction (t=0.008, β= 0.196, Sig. >0.845) had no statistically significant impact on SA. Based on the result researchers can conclude that H5 was not supported. when students answered the open-ended question, they started their online learning problems in that many of them revealed that interaction related problems such as: “Lack of physical experience”, “Do not having close supervision in online learning”, “Feeling lonely and confident less without my friends”, “I feel bored sometimes”, “Difficult to spend more time on online lectures”, “It is very difficult to stay at the lecture for a long time because after the lectures we will get physical issues like back pain”, “Increase the mental pressure”, “I cannot discuss with friends”, “I really miss my friends when I’m struggling in difficult concepts”, “Difficult to sitting a long time without refreshing mind”, “Lazy to attend long time lectures”, and “Without physical classroom settings it is less motivation to study”. The same result was found by Uppal et al. (2018).

4.4 Stepwise Regression Analysis

In this research stepwise linear regression was used to explore the influence of potential predictors on student’s satisfaction in online learning. Four of the six independent variables were found to generate the best model (Table 4, 5, and 6). The result of model summary Table 3 was indicated that Model 1, R-square at 0.7, which means 70% variation for the dependent variable (SA) that could be explained by the perceived usefulness and ease of use (PUEU). In model 2, R square change specified that when adding the instructor quality (IQ) with PUEU, R square increased by 0.015, which mean 1.5% variation for the dependent variable (SA) that could be explained by the IQ and Model 3, R square change is 0.013, which implies that 1.3% of the variability in the dependent variable is accounted by the course delivery (CD). Altogether 72.9% variation in the dependent variable (student’s satisfaction in online learning) is caused by the independent variables (PUEU, IQ, and CD). Table 5 shows the ‘Excluded Variables’ which were removed from each model. Two of the five independent variables were found insignificant to create the final model (Model 3). The independent variables excluded from the model were technology and interaction.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.837a	0.700	0.699	0.38713	0.700	710.631	1	304	0.000
2	.846b	0.716	0.714	0.37762	0.015	16.511	1	303	0.000
3	.854c	0.729	0.726	0.36967	0.013	14.176	1	302	0.000

a. Predictors: (Constant), PUEU, b. Predictors: (Constant), PUEU, IQ

c. Predictors: (Constant), PUEU, IQ, CD

(Source: Survey Data)

Table 5. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.505	1	106.505	710.631	.000[b]
	Residual	45.561	304	.150		
	Total	152.066	305			
2	Regression	108.859	2	54.430	381.700	.000[c]
	Regression	108.859	2	54.430		
	Total	152.066	305			
3	Regression	110.796	3	36.932	270.258	.000[d]
	Residual	41.270	302	.137		
	Total	152.066	305			

a. Dependent Variable: SA

b. Predictors: (Constant), PUEU

c. Predictors: (Constant), PUEU, IQ

d. Predictors: (Constant), PUEU, IQ, CD

(Source: Survey Data)

Table 6. Excluded Variables

Model		Sum of Squares	df	Mean Square	F	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	IQ	.187b	4.063	.000	.227	.442	2.262	.442
	CD	.210b	4.273	.000	.238	.386	2.591	.386
	IN	.018b	.581	.561	.033	.999	1.001	.999
	TE	.004b	.123	.903	.007	.998	1.002	.998
2	CD	.184c	3.765	.000	.212	.377	2.652	.287
	IN	.008c	.247	.805	.014	.992	1.008	.439
	TE	.002c	.081	.935	.005	.998	1.002	.441
3	IN	.006d	.197	.844	.011	.991	1.009	.287
	TE	.000d	.013	.989	.001	.997	1.003	.287

a. Dependent Variable: SA

b. Predictors in the Model: (Constant), PUEU

c. Predictors in the Model: (Constant), PUEU, IQ

d. Predictors in the Model: (Constant), PUEU, IQ, CD

(Source: Survey Data)

Table 7. Summary of the Hypothesis Test

Hypothesis	Path	P-Value	Result
H1	IQ → SA	0.000	Supported
H2	PUEU → SA	0.000	Supported
H3	CD → SA	0.000	Supported
H4	TE → SA	0.551	Not Supported
H5	IN → SA	0.447	Not Supported

(Source: Survey Data)

4.5 Discussion

In the current research, the authors assessed the five factors that influenced student's satisfaction in FCM, EUSL's online learning during the COVID-19 pandemic. Due to the pandemic circumstance around the world, almost every University and school were moved to online mode. Nobody has the proper information that how long this pandemic will continue, and consequently, the teaching platform was moved to online mode. Despite the fact that a portion of the instructors was not well trained hence, they prepared themselves to fight the unexpected condition (Pillai et al., 2021). The current research outcomes will help the instructors to understand the level of student's satisfaction and various factors that are required when taking the online lectures.

The instructor quality has a positive and significant effect on student satisfaction in online learning. It is found that all FCM's instructors have great skill in teaching, which is confirmed by learners clearly understanding the concept explained by lecturers. It is clear that online learning does not affect the student's and instructor's teaching and learning process. Researchers revealed that compare with face-to-face lectures students do not concentrate properly and they waste more time daydreaming on lectures (Szpunar, Moulton, & Schacter, 2013). Hence, lectures capacity is necessary to motivate student's full involvement or participation and understand the study materials. Students appreciated the creative skills of lectures because students want to be appreciated as energetic participants rather than passive or inactive listeners (Brozova, Horakova, & Fiedler, 2018). According to Ladyshewsky (2013) stated that if the instructor conveys the course effective manner and guides the students to improve in their learnings then this practice will prompt the student's satisfaction and the learning system.

The present study highlighted that "perceived usefulness and ease of use" is the most noticeable and influencing factor of student's satisfaction in FCM, EUSL online learning. This current study proposes that students' perceived usefulness and ease of use is a significant element to satisfaction. As indicated by the previous scholars who have conducted the survey on perceived ease of use, students' required low effort to carry out their task when they feel a course structure be easy to use (Davis, Bagozzi, & Warshaw, 1992). According to Sun et al. (2008), if students feel the online learning framework to be not difficult to use, they are allocated to give their time and consideration for learning the course materials as opposed to putting extra energy to adapt to the e-learning framework.

Based on the output of this study revealed that course delivery has a significant influence on student's satisfaction in FCM, EUSL online learning. Previous scholars also confirm that the way of delivering the online learning programme plays a significant role in learner satisfaction (Arbaugh & Duray, 2002; Kim, Lee, & Ryu, 2013). Contrasted with the conventional classroom setup, online learning is not controlled by space or time, or location. Students have a peak level of adaptability and could guarantee that the learning opportunities are self-guided. Course delivery includes the general course structure, study materials, discussion preparations, and arrangement. If course delivery is properly designed students have less chance

to get frustrated and it helps to improve their confidence in online learning, hence it leads to getting a better learning experience for students.

This study found that technology does not influence the student's satisfaction in FCM, EUSL'S online learning. Webster and Hackley, (1997) indicated that high quality of technological attributes necessary to provide or implement successful online learning and improve the student's satisfaction. The utilization of online devices relies absolutely upon a good internet connection, and it also influences the learner's satisfaction. Based on the previous section's discussions, technology with its insignificant impact in this study does not recommend technology is not an important factor, but it is suggesting that technology used in the online learning setting is not suitable for students. During the lecturing time, students face many difficulties to express their opinions due to technical issues or weak internet quality. In an online learning setting, low technology with repeated technical problems will be demotivating students and discourage students from involving online learning.

This study identified that interaction does not significantly influence the student's satisfaction with FCM, EUSL'S online learning. Suitable clarification for this outcome is that the research did not interpret the high quality of the interactions. Swan (2001) found that in his study students have a high level of learning performance and satisfaction when they get the opportunity to interact with the instructor, their colleague, study material, and their peers. Arbaugh (2000) and Swan (2001) suggested that teaching method with a high degree of interaction with instructors is definitely lead to a high level of learner satisfaction and performance. Although a learner's view of interaction with lectures and their batch mates are important in his/her degree of satisfaction with the online learning experience.

5. Conclusion

This research observed that the research model that aims to clarify student's satisfaction in online learning and revealed that out of the five predictor variables (instructor quality, perceived usefulness and ease of use, course delivery, technology, and interaction) only three variables (instructor quality, perceived usefulness & ease of use and course delivery) explained 72.9% of the variance in the dependent variable (satisfaction). And other two variables (technology and interaction) are excluded from the model.

In other words, this implied that out of five selected factors only three factors (instructor quality, perceived usefulness & ease of use, and course delivery) had contributed to 72.9% of the variance in the dependent variable. At the same time, among these three factors (instructor quality, perceived usefulness & ease of use, and course delivery) around 70% of the variance in the dependent variable (student's satisfaction in online learning) is only explained by perceived usefulness & ease of use. Nonetheless, this research mentioned that 27.1% of the variance was not explicated by this research model, to overcome this limitation current research recommends to future scholars to do an additional investigation in this field. According to the results of this study, instructor quality, perceived usefulness, and ease of use and course delivery had statistically significant and positive impacts on student satisfaction, but technology and interaction had no statistically significant impact on student satisfaction in online learning. In an open-ended question, students reported diverse

opinions about their difficulties in online learning during COVID-19 and they stated that interaction and technologies are the key problems that they faced during online learning.

6. Recommendation

Recommendations of this study in three levels such as first Faculty, second University, and third for policymakers.

Recommendations to the Faculty

This research mainly focused on the undergraduates in FCM, EUSL who are currently involved in online learning activities. This study found some crucial problems faced by the students such as interaction and technology-related problems. This study found that 63.5% of undergraduate students use smartphones for their online learning. In FCM, EUSL some students had to access online lectures through smartphones, while many were using mobile data packages that were rarely available in some remote places. Students who come from low-income households suffered excessively, and gaps developed in admittance to online university education. Therefore, Faculty can make some arrangement to get financially support to the students who comes from low-income families through the scholarship facilities or bank loans/donors.

Faculty can form a committee for online learning discussion, and that should incorporate all batch Student Representatives, all Heads of the Departments, Senior Lecturers, and the Dean. This committee should be assembled at least once a month and allow students to communicate their online educational circumstances through their batch representative. This discussion will be facilitated lecturers to understand students' actual problems and can take immediate action. Faculty can arrange workshops for students to demonstrate how effectively use the online learning tools and how to overcome the problems. Those demonstrations and instructions should be uploaded in the form of video; it will reduce students' misunderstandings for example online exam instructions.

Rather than conducting the live lectures, in advance if lecturers recording their lectures and delivering them to the students is a feasible solution to reduce the students' frustrations and boredom. If lecturers take live lectures only for the discussion part, it will motivate students' interaction, participation, and involvement. Through this method lecturers and students can save their time and eliminate unwanted technical problems. Currently, students are limited within their home environment lecturers cannot expect a suitable learning environment like a university lecture room. If lecturers consider the above-mentioned method, students can refer to their lectures notes whenever they have a peaceful learning environment.

Recommendations for the University

University is responsible for new online learning platform and method acquisitions through other local and international educational bodies. Interaction and communication with other state universities and foreign universities can improve the effectiveness of online learning.

Recommendations for Policy Makers

It is very important to ensure the effectiveness and identify the problems of university online learning. Many Sri Lankan state universities are using LMS and Zoom software for their online learning but those have some problems. Government should focus on new educational software developments especially for university students and nowadays universities struggle to conduct semester examinations, therefore proper techniques and training should be provided to each and every university lecturer and student through workshops.

Online education, which is accessed through smartphones, restricts access to reading materials, writing tasks, and solving quizzes through learning management systems. Providing laptops to all university students will create a more conducive environment for the online learning education system. This study suggested that introducing a loan scheme for undergraduate students to buy laptops may solve many technology-related problems and increase the interest of university students in online learning.

The shortage of regularly stable, high-speed network access was the most significant challenge for undergraduate students in continuing university degree programme during this COVID-19. Mobile data was important for online learning, therefore in Sri Lanka, all Internet service providers facilitated free access to university web servers during the COVID-19 pandemic in order to boost the student's engagement. But still, most of the students had concerns about the affordability and stability of internet access.

In addition to challenges in internet connectivity, this study found that interaction is the main problem in online learning. This study suggested a blended learning system to solve interaction problems, this may facilitate to increase in the involvement and satisfaction on online learning. Hence, the Sri Lankan University education system needs to review curriculums, instruction, and examinations for blended or mixed learning. During COVID-19, universities did everything they could to provide online education using offline curriculums, but this model was not sustainable. For example, providing practical training with the support of lecturers is challenging and student involvement through online education is limited. It will take time to develop and distribute the vaccine for COVID-19, so mixed learning should be integrated into the regular curriculum to manage university education during and after COVID-19. Pandemic situation force universities' academics and students to adopt online learning without any preparation and proper knowledge about learning software, therefore more students struggle with online learning, this lead to less satisfaction with online learning.

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