Integration of Technology Continuance Theory towards LMS acceptance after COVID 19 Among Business Administration, Marketing, and Social Sciences Instructors

Filipinas L. Bognot[1], Solomon Ayodele Oluyinka[2], Adegbite Ganiu Adewale[3]

*[1]City College of Angeles, Philippines, [2]Baliuag University, Bulacan, Philippines,
[3]Ogun State Institute of Technology, Igbesa, Ogun State, Nigeria*
[1]filipinasbognot@cca.edu.ph , [2]solomon467@gmail.com,[3]wganiu08@gmail.com

Abstract

The COVID-19 outbreak has brought substantial disruption to life and many sectors at one stroke. The pandemic has forced the closure of three basic levels of education (primary, secondary and tertiary) across the world, teaching and learning activities then shifted to an entirely online environment. The unusual challenges of whether instructors were adequately prepared in terms of their capability in delivering their lessons from traditional to e-learning and their intent to continue after COVID-19 faded prompted the researchers to conduct this study. As a result, this study seeks to extend the reliability of Technology Continuance Theory (TCT) constructs and explore the factors that influence the acceptance and continuity of learning management systems (LMS) used by Business Administration, Accounting, Marketing, Social Science, Entrepreneurship, and related instructors during the COVID-19 pandemic. A total of two hundreds and nine responses collected through online surveys among university and college and senior high schools' instructors in the targeted that exploiting LMS during Covid 19 new normal. Modeling and structuring approaches with a statistical tool known as SmartPLS 3 was utilized. The findings showed that 9 of the 11 hypotheses were supported, with facilitating conditions regressing on satisfaction perception being the most strongly supported, followed by the ease of use perception on information richness. Future studies are recommended to validate ease of use perception on LMS continuation intent and usefulness. In this study, the perception of information richness effects was found to be unsupported.

Keywords— Marketing instructors, usefulness, ease of use perception, LMS continuance, Philippines, Malaysia

INTRODUCTION

The World Health Organization (WHO) has recognized the onset of COVID-19, a global pandemic. Around the world, educational systems were severely impacted, resulting in the near-total shutdown of all levels of basic education. The WHO designated the COVID-19 outbreak a public health emergency of worldwide significance on January 30, 2020. As the pandemic spread, several nations, including the Philippines, implemented lockdowns during which schools, colleges, and other institutions were shuttered. The United Nations Educational, Scientific and Cultural Organization (UNESCO) reported that as of early April, 1.5 billion students were affected by school or university closures across the world [1]. In a nutshell, the three basic levels of education (primary, secondary and tertiary) around the world have been forced to adopt different forms of learning management system (LMS) to ensure continuity of teaching and learning.

However, the temporary closure expected to reduce the spread of the disease in the community by breaking down main

transmission chains [2]. In a way the pandemic 2019 represents an opportunity for the three basic levels of education to expand the use of digital resources in learning and teaching [3], [4]. Using the learning management system is a significant ingredient in this paradigm change, but this pandemic hastened the transition to online learning. With most the three basic levels of education embarking on this mode, different mechanisms and approaches have been adopted to ensure that online teaching and learning is feasible and efficient during this pandemic time [5]; [6].

The value of the LMS ensures an effective transition in the three basic levels of education to a more sustainable teaching and learning environment. Learning management systems is an alternative for those who want to move from classroom to online learning [7]; [8], [9]. Learning management system enables learners to access interactive lessons, exchange ideas with their teachers, compile course materials, take online exams, and send classroom assignments [10]; [11].

Several recent articles related to adoption learning management systems during Covid 19 pandemic stated that the current era of COVID 19 has revolutionized online education to a greater extent [12]; [13], also suggested that the usage LMS could be an integrated contentious mode of teaching and learning in all the levels of education after the crisis [14]; [15]; [16].

[17], all the E-learning platforms used by the respondents are free of charge, still, students have encountered problems like lack of resources, difficulty of Wi-Fi connection, and lack of training among the students and faculty members. this study recommends professional development workshops for both faculty members and students and preparation of advanced lessons, slide presentations, and examinations per unit to cope with the prescribed number of hours set by the Commission on Higher Education (CHED). It is also expected that this action research would serve as a future guide for conducting an in-depth study using a structured interview to validate its findings.

Despite the forceful usage of learning management imposed on schools, colleges and universities in the Philippines due to the Covid 19 crisis. Though studies indicated that some schools, colleges and universities already using different forms of LMS partially used before the occurrence of the pandemic [7]; [11]. Studies suggested that some instructors were struggling to familiarize with different types of LMS plate-form like Canvas, Google classroom, Moodle and others to enhance learning and teaching in all the levels of education in the amidst of pandemic. This lead to subject mattered, if some not finding it interesting, there is tendency of discontinuity in the future among the teachers. Thus, intend to investigate intention to continue usage of LMS particularly google classroom which involved google meet for the virtual teaching and learning.

Besides, [18] the technology continuance theory (TCT) is a combination of three most utilized theories in the study associated with Technology and information system. The three combined included technology acceptance model (TAM) [19], expectation confirmation model (ECM) [20], and cognitive model (COG) [21]. TCT is known as a three-level model with IS continuance intentional as being the finalized dependent variable. TCT consists of satisfaction and attitude as main construct, and confirmation, perceived usefulness, and perceived ease of use suggested as three levels of antecedents, almost of the hypotheses suggested in TAM, ECM, and COG actually included in TCT [18] suggested.

LITERATURE

Technology continuance theory [18] stated that user's satisfaction could be defined as the function of expectations and disconfirmation. The study added that an individual's behavioral intention can be initially defined as a function of attitude, and later is a function of satisfaction, attitude, and it plays a larger role in determining intention for the short-term users. Confirmation formed when the performance

after usage is greater than or equal to the prior expectation in the use of a specified technology, confirmation reflects the realization of expected value, which in turn increases levels of intention to continue usage of such technology [18].

Rahim [22] corroborate perceived usefulness, ease of use, satisfaction, and attitude. Furthermore, by combining satisfaction and attitude into a single construct, TCT contributes to the debate over users' continued adoption. The study found that users' satisfaction, as one of TCT's attributes, is an important factor that can be used to improve continued usage of a specific technology. Similarly, Tsai et al. [23] study used the theory of continuance [18] to justify the influences of system usability and user satisfaction regarding intention continued use, concluded that continuance use could be determined by the perceived usefulness and perceived compatibility in relation to satisfaction level.

According to Baticulon, Ronnie, Reyes, et al. [24], the most frequently encountered barriers during online education in the midst of the COVID-19 pandemic were difficulties adjusting learning styles, responsibilities of working remotely, and poor communication between educators and learners. Observations such as technology accessibility, information accessibility, and good communication, especially between instructors and students, should be among the most concerning [25].

Pokhrel [26] present a thorough analysis of the COVID-19 pandemic's influence on online teaching and learning of various articles, as well as recommendations for the future. The study suggested looking into how to use the facilitating elements and how to prevent wastage of resources and information. Likewise, as non-traditional students and those looking to improve their skill sets search for ways to study on the job, Felix [27] suggests that universities should closely investigate certificate and virtual route systems. The findings supported the idea that colleges can use a combination of physical and online resources to expand their student pool.

Furthermore, Ploj et al [28]'s study concluded that organizational support, perceived ease of use, and attitude toward online learning are not good markers of long-term intention to use information technology after the lockout ends, but usefulness and satisfaction are. Thus, there is inconstancies in difference studies. Thus, there is a need to justify the actual facts about the dimensions of perceived ease of use and usefulness of LMS and satisfaction

According to Croucher's [29] investigation, there will be an increase in students' acceptance of online education in the future as a result of various schools' moving from campus-based to online delivery, and thus the experience and benefits of online learning have expanded during the pandemic education measures. They also recommended that this study and its findings be replicated in other regions in the future.

Aliyyah et al [30] conducted a study on instructors' perceptions of online learning in an Indonesian program. According to the research, online collaborative learning among stakeholders (teachers, parents, and schools) has an impact on students' performance as well as their perspective of behavioral control in terms of technological preparedness, which was considered significant in this study.

Gillis [31] stated that effective implementation of learning materials during transition for students should be considered more important than the instructional approach instructors utilize. Barriers to the internet and technology were relatively widespread. As a result, teachers may believe that integrating a learning management system will make it difficult for students to gain knowledge. Therefore, the present research will focus on justification in the view of the instructors during and after pandemic education.

The conclusion of research assessing user retention intentions toward library self-service technology [32] revealed that post-adoption expectations of perceived performance influenced library users' inclinations to continue. Al-Samarraie [33], explored causal links between these variables and e-learning persistence satisfaction. Information quality,

task–technology fit, system quality, utility value, and usefulness are the five key elements. The findings shed new light on how higher education institutions can improve retention satisfaction and keep e-learning relevant

Cheng [34] found that perceived ease of use and satisfaction are major motivators in generating continued intention in the later phases of technology adoption in their research. Students' attitudes about LMS use were linked to satisfaction, and perceived usefulness had a substantial impact on long-term intention and contentment.

Most of the previous studies involved acceptance of LMS in the context of students mostly, and limited studies found related to the role of facilitating condition and effectiveness of information richness in the relationship with other technologic factors towards satisfaction and continuous usage of LMS. Thus, there is a need to investigate their satisfaction on the technology and experience towards continual usage of current adopted LMS or call for change, also to suggest most usable among the common LMS that is mostly adopted within location of this study. There is a need to expand the number of participants by including the three basic levels educations educators.

Methodology and Research Model

With eleven posited linkages, Figure 1 depicts a research paradigm for investigating acceptability and continuing use of a learning management system (ACULMS) during and after COVID 19. In order to support acceptance and continued use of LMS, this research model combines three important dimensions of [18] 's technology continuance model (i.e., perception of satisfaction, usefulness, and ease of use) with facilitating conditions from the UTAUT model [35] and information richness effects [36]; [37]) study. The suggested enabled this study to explore the effectiveness of these dimensions on the newly formed conceptual model. Furthermore, information richness may serve as a link between usefulness and ease of use perceptions of ACULMS in a different way, and facilitating factors may impact satisfaction. Finally, elements such as the facilitating

situation and the perception of usefulness may have an impact on the satisfaction perception described in this conceptualization.
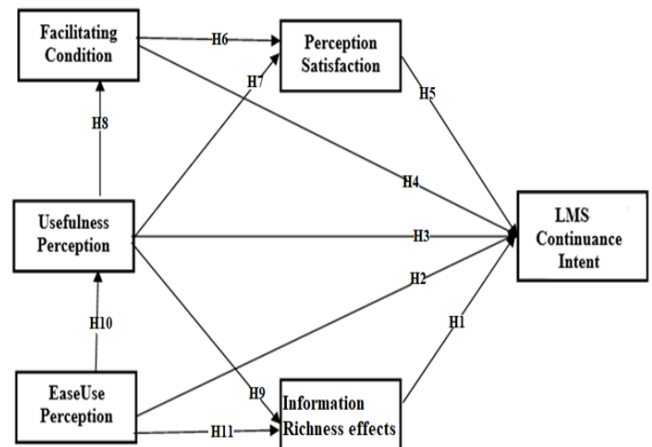

Figure 1: Research Model: Technology continuance theory [18]

Hypothetical HINTS

This study recognizes that technological acceptance and adoption take place in stages. The behavioral intent variable used in the original model was renamed "LMS Continuance Intent" to better reflect the context of IS continuation and increase the robustness of our findings. Although previous research has demonstrated that "intent" is a good match as a dependable variable to use.

External variables such as confirmation and attitude are not included due to the fact that they are not supported in studies. Finally, this is cross-sectional research that focuses solely on technology acceptance and continuance model variables. Fig 1 of this paper depicts the model. The path assumptions are based on the publications and model developed by [18]. Thus, the assumptions apply to each of the categories of users.

Effectiveness of information richness and learning management system continuance path dimension

The environment influences information richness in the sense that it has a significant impact on people's behavior. When the information presented is enough, it may be used to enhance an individual's experience and allow for the development of relationships. Reliable information can aid in the development of a better teaching–learning environment and

increase technological engagement [37]; [36]. Students prefer to use a learning platform that offers high-quality content, and students who report higher levels of satisfaction have a more positive outlook on using an online learning system [38] and quality of information would be a matter of successful online-based teaching [39]. Thus, hypothesized that effectiveness of information richness may influence learning management system continuance positively (H1)

Perception of ease of use and usefulness towards LMS continuance intent path dimension

Perceived usefulness and perceived ease of use are among the most important aspects in influencing satisfaction and desire to continue using any given technology, according to the philosophy of continuation technology [22]. According to a study on the model of forced distance online learning preferences' satisfaction and continuance variance in MS Teams applications, perceived usefulness is a powerful indication of continuum preferences to utilizing information technology after the COVID-19 pandemic [28]; [40]).

Huang [41], previously stated unequivocally that the most significant predictive indicators in analyzing information technology use are usefulness and ease of use assessment. Perceived ease of use and perceived usefulness are important factors in assessing technology's efficacy, and both have a direct impact on user intention to continue usage of the specified. Many investigations have used the TAM major factors to investigate intents to embrace new technology in various settings, with ease of use and usefulness being key factors in their conclusions [42]; [43]). Hence, the following hypotheses are suggested: The intent to continue the usage of LMS is positively affected by the users' perception of ease of use. (H2) and intent to continue the usage of LMS is positively affected by the users' perception of usefulness (H3)

Facilitating Conditions and perceived satisfaction towards continuance intent path dimension

Reyes et al [17] Although all the e-learning platforms used by the respondents are free of charge, still, students have encountered problems like lack of resources, difficulty of Wi-Fi connection, and lack of training among the students and faculty members. this study recommends professional development workshops for both faculty members and students and preparation of advanced lessons, slide presentations, and examinations per unit to cope with the prescribed number of hours set by the Commission on Higher Education (CHED). It is also expected that this action research would serve as a future guide for conducting an in-depth study using a structured interview to validate its findings [44]. Thus, hypothesized the following that; Facilitating condition may effect on LMS continuance intents (H4) and continuance usage of LMS among business administration and accountancy instructors may be influenced by perception of satisfaction during the trial (H5.).

Meanwhile, studies reported that technical material and other resources such as laptop, smartphones, postpaid internet subscription, prepaid mobile data, capable of engaging in online learning lead to poor communication between educators and learners [45]; [24]). Thus, may results into discontinuity of learning management system by the users. Hence, this particular study hypothesized that facilitating conditions may affect the perception of satisfaction of business administration and accountancy instructors to continue usage of the specified LMS (H6)

Role of usefulness perceived and ease of using towards LMS continuance intent

In a comparative study on the perceptions of instructors and students in terms of their intention to accept and continue a learning management system, Islam [46] suggest that students have more positive perceptions regarding the usefulness and compatibility of the LMS than educators. According to the survey, student satisfaction was also lower than that of instructors. The variation of students' continuous intentions, which were explained by satisfaction and usefulness, was 12 percentage points lower than that of instructors. Similarly,

a model tested using statistical data from fewer than 160 university students reveals that perceived usefulness is the strongest predictor of students' continued intention. The study reported that students' attitudes toward LMS and their satisfaction level exert no significant influence on their continuance intention [47]). Considering previous studies' findings, Thus, hypothesized in this study that usefulness perceived by business administration and accountancy instructors has a link with satisfaction perception to continue LMS usage after the pandemic (H7)

In a qualitative study, listed internet connection conditions, mode of interaction, communication, motivation, and student engagement as hindrances to online learning. On the part of the instructors, self-efficacy level, a lack of support, and facilitating resources in using technology to teach online were suggested as reasons why instructors struggle to deliver efficiently [48]. In relation to this publication, this particular study hypothesizes that; usefulness of the LMS to business administration and accountancy instructors may be linked to facilitating conditions(H8) and informative richness effects (H9) towards usage of the technology. The usefulness point of view was substantially influenced by information system quality and self-efficacy, which in turn indirectly affected behavioral intention toward adopting technology. Further [49] claimed there is correlation between information system quality and TAM variables towards the intent to use LMS. As a result, it is replicated that ease of use may influence usefulness perception (H10). It may also be correlated with the informative richness of the aforementioned instructors' intent to continue using the specific LMS technology (H11).

Research Methodology
Data Collection

Instructors from business administration, accountancy, marketing, social science and entrepreneurship departments in the Philippines and Malaysia took part in this study. To collect data, a Google form survey was circulated to colleges, universities, and senior high schools in Region III of the Philippines, as well as two institutions in Johor Bahru, Malaysia via social media apps.

The semester of 2020–2021 was chosen as the study period. Data was collected beginning in August 2021 and ending on December 23, 2021. The researchers transmitted the link using a simple sample data gathering method. The route included social media apps such as WhatsApp and the Facebook wall among the targets.

A total of 209 responses were taken into consideration. Meanwhile, a minimum of 377 samples is recommended by the sample size calculator (Raosoft.com). Because the population number is uncertain, a sample size of 20,000 is advised. The calculation was based on a margin of error of 5% at a 95% confidence level and a 50% response distribution. This indicates that a sample size of 209 achieved is insufficient. However, studies have claimed that in a structural equation modeling investigation, a thumb rule of ratio (1:20) for each construct may be considered [50]; [51]; [52]. This study suggested six constructs, with a total of 120 participants being sufficient [51]; [52]. As a result, 209 participants decided to investigate the instructors' intent to continue using LMS in conventional education even after a pandemic.

Furthermore, the most recent theories were utilized and modified for utilization in the context of LMS continuity. The measurement model has been evaluated by four technology acceptance experts, who were from the University of Ibadan and the Ogun State Institute of Technology (OGITECH). The third and fourth instrument evaluators came from the University of Tun Hussein Malaysia (UTHM) and the University Teknologi Malaysia (UTM) Johor Bahru, Malaysia.

Researchers confirmed the instrument's significance using a sample size of 25, and a statistical software called SmartPLS Version 3.3.2 confirmed the instrument's significance as all Cronbach Alpha falls within 0.705 to 897. However, a Cronbach alpha of 0.70 is recommended [53]. The final pathway model was used to perform advanced analysis.

Instrument adopted

All eleven hypotheses in this study were validated with the use of a survey instrument. The questionnaire assessed six different constructs. There are 27 indicators in the modeling survey and four questions in the demographic details survey. The observed constructions and their references are listed in Table 1. The applicability of this study has been enhanced by modifying a previous research questionnaire published.

Table 1. Factors and Measurement Indicators.

FACTORS AND MEASUREMENT INDICATORS.	
FACILITATING CONDITION QUESTIONS AND CODES	**SOURCES**
Have a smartphone with an installed necessary application for online teaching and learning (FC 1)	[45], [43]
I have access to a computer/laptop/phone with an internet connection at home (FC 2)	
I have a dependable computer/laptop/phone with a dependable browser (FC 3)	
I am willing to seek connectivity with neighbors/family at home (FC 4)	
I can easily connect my computer/laptop/phone monitor, printer and others (FC5)	
PERCEIVED USEFULNESS QUESTIONS AND CODES	**SOURCES**
Our LMS is useful. I will continue utilizing it after the COVID-19 pandemic (PUSE 1)	[40], [42]
The LMS proves my productivity (assigning assignments, grading, and recording). I will continue to utilize it (PUSE 2)	
The learning management system enhances my effectiveness in teaching and I will continue to use it (PUSE 3)	
After the epidemic, I will continue to use our learning management system since it is a tremendous aid to my teaching (PUSE 4)	
I'll keep using the learning management system since it helps my learners study more effectively (PUSE 5)	
PERCEPTION ON EASE OF USE QUESTIONS AND CODES	**SOURCES**
I believe I will continue to utilize the learning management system since it is simple to use (EASE 1)	[54], [42]
Will continue to use the learning management system since it is simple and straightforward (EASE 2)	
Will continue to utilize the learning platform (LMS) after pandemic since interaction with the students is achievable (EASE 3)	
LMS is "user-friendly" in terms of what I want it to do (such as grading and plagiarism checking. Will continue usage (EASE 4)	
Schools adopt different LMSs and experience simplicity in using them. After the pandemic, it is worth adopting often (EASE 5).	
SATISFACTION PERCEPTION QUESTIONS AND CODES	**SOURCES**
My whole experience while using it was quite positive. I think of continued usage after the pandemic (SATI1).	[40], [44], [18]
The LMS matches professionally during the COVID-19 virtual classroom. I am optimistic about	

continuing to use it (SATI2).	
I will keep using LMSs because they're such an important resource for instructional materials in face-to-face sessions (SATI3)	
I will continue using the LMS after the pandemic because it fits my plans and I was thrilled with my whole experience (SATI4)	

INFORMATION RICHNESS EFFECTS QUESTIONS AND CODES	SOURCES
I think my understanding of the learning management system urges me to keep utilizing it after the COVID-19 pandemic (IRE 1)	[42]
I believe continual usage of the LMS after the pandemic will boost my grasp of teaching objectives and results (IRE 2)	
My perception of additional updates will improve if I continue usage of LMS with face-to-face sessions after the epidemic (IRE 3)	
Using it gives me information that is simple to comprehend, and entertaining, will continue usage even after the pandemic (IRE 4).	

INTENT TO CONTIUE USAGE OF LMS QUESTIONS AND CODES	SOURCES
I intend to continue utilizing our LMS rather than discontinue usage after the COVID-19 pandemic (LMSI1).	[44], [43]
My intentions are to continue utilizing our LMS with traditional modes of education after the COVID-19 pandemic (LMSI2).	
If I had the option, I would use it as often as feasible after the pandemic (LMSI3).	

Overall, most of my expectations from utilizing a LMS were confirmed for continuance intention (LMSI4).	

The questionnaire's pilot study

A pilot research was conducted to verify the consistency of the above-mentioned questionnaire indicator. Twenty-five postgraduate students from Universiti Tun Hussein Malaysia's Faculty of Computer Science and Faculty of Technology Management & Business were chosen at random for the pilot project. The Cronbach's Alpha (CA) test was used to evaluate the results of the pilot research. It uses IBM SPSS Statistics version 20 to help identify internal dependability. As a result, the reliability coefficient for all of the measurement items was 0.70 above, indicating that the results offered were acceptable [53].

Structure of the instrument

Instructors were given a questionnaire survey to complete via social media [43]; [54]). Two parts were included in the survey. The participant's data (gender by birth, age, location, and educational background) is collected in the first part, and there are twenty-seven indications in the second part pertaining to the intention to continue using LMS after the pandemic in the schools of business administration, accounting, marketing, and entrepreneurship by the instructors.

There are four indicators in each of the information richness effect and satisfaction perception. Meanwhile, perceived ease of use and facilitating conditions both have five indicators, and intent to continue using the LMS has four, making this construct the dependent factor in this study. The four-point Likert scale is utilized to measure all 27 indicators. The scale includes "strongly disagree" (1). "disagree" (2), "agree" (3), and "strongly agree" (4).

Findings and Discussion
Participant's demographic data

The demographic data of the participants has been analyzed and is reported in Table 2. Females dominated, with a 55% claim

compared to 45% for males. Furthermore, 15.7% of the participants were between the ages of 21 and 30, and 54.1% of the participants were between the ages of 31 and 40. The age brackets 41–50 had a 21.1%, and the age bracket 51-above showed a 9.1% of the total participants of the study. The majority of the participants held Master's degrees in their field of study. In the sample, 24% had earned a bachelor's or equivalent degree, 57% had earned a master's degree, 12% had earned a doctoral degree, and the rest claimed 7%.

This particular study was dominated by instructors from Johor Bahru, Malaysia, with a claim of 63.2% of the whole study, and 36.8% of the participants were from Pampanga Region III of the Philippines. This study claimed a purposive sampling approach since the participants' sources were based on ease of access and voluntary participation [55]. Furthermore, Microsoft Excel was applied to measure the participants' demographic data. A comprehensive respondent demographic data presented in Table 2.

Table 2: Participant's Demographic Data

Criterion	Variables	Frequencies	Percentages
Gender	Female	115	55%
	Male	94	45%
	Total	**209**	**100%**
Age			
	Bracket 21-30	33	15,7%
	Bracket 31-40	113	54.1
	Bracket 41-50	44	21.1%
	Bracket 51-above	19	9.1%%
	Total	**209**	**100%**
Educational Degree Earned			
	Bachelor/Equivalent degree	50	24%
	Master's degree	119	57%
	Doctoral degree	25	12%
	Others	15	7%
	Total	**209**	**100%**
Participants locations			
	Pampanga: Philippines	77	36.8%
	Johor Bahru: Malaysia	132	63.2%

Total	209	

As demonstrated in Table 2, females are more interested in participating in research survey studies than males, according to this study. Furthermore, early in their careers, instructors in these two countries (Philippines and Malaysia) are urged to attain the highest academic degrees. This discovery aligns with the results of some studies [43]; [56]). In comparison to Malaysian instructors in this study, data collection appears to be more challenging among the Filipino instructors.

Data analysis and tools

The data analysis of the research study was carried out using the SmartPLS V.3.3.2 software and the partial least squares–structural equation modeling (PLS-SEM) [57], a two-step evaluation technique used to analyze the acquired data [53]). The PLS-SEM is the best option since current research involves the use of existing theory [58]) and may be used to easily manage exploratory research of complicated models [53]. Furthermore, the PLS-SEM evaluates the full model rather than dividing it into different segments [59]. Another benefit of employing the PLS-SEM is that it allows a simultaneous equation analysis of the measurement and the modelling, resulting in exact computations [11].

Convergent validity

When evaluating the measurement model, [53] suggest considering validity, which includes convergent and discriminant validity, as well as construct reliability, which includes composite reliability (Comp-R), Rho-A, and Cronbach alpha (C-alpha). value of 0.70 or above should be used as the cutoff point, and all achieved in this study and presented in the table 3. Furthermore, the convergent validity should be measured by testing the average variance extracted (AVE) and factor loading (FA). Where the AVE expected to be greater than 0.5 and the FA to be greater the 0.6 value. Table 3 indicate that the suggested values achieved for the constructs. According to Table 3, values between 0.633 and 0.815 noted by AVE, and these are higher than the 0.5 threshold value.

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Table 3: Convergent validity reports

Variables/ Indicators	FA	C-alpha	Comp-R	Rho-A	AVE
FC 2	0.854				
FC 3	0.761	0879	0.871	0.764	0.715
FC 4	0.865				
FC 5	0.896				
PUSE 1	0.701	0.719	0.817	0.829	0.673
PUSE 2	0.862				
PUSE 3	0.763				
PUSE 4	0.905				
PUSE 5	0.854				
EASE 1	0.887	0.801	0.783	0.872	0.633
EASE 2	0.771				
EASE 3	0.700				
EASE 4	0.812				
SATI 1	0.906	0.896	0.823	0.874	0.800
SATI 2	0.899				
SATI 4	0.877				
IRE 1	0.792	0.808	0.856	0.819	0.730
IRE 2	0.831				
IRE 4	0.934				
LMSI 1	0.922				
LMSI 2	0.898	0.865	0.810	0.879	0.815
LMSI 3	0.890				
LMS	0.909				

Moreover, Convergent validity suggested the removal of four indicators which include (FC 1; EEAS 5; SATI 3; and IRE 3)

Discriminant validity

Towards the measuring discriminant validity, two criteria, Fornell–Larcker and Heterotrait–Monotrait ratio (HTMT), have been suggested [53]. Table 4 shows that the Fornell–Larcker criterion is satisfied since the AVEs and their square roots are greater than the rest of the correlation constructs [60]. Figure 2 presents the HTMT ratio data, which shows that the 0.85 threshold value consistently outperforms the other construct values [61].

Table 4. Fornell–Larcker Scale.

	EASE	FC	IRE	LMSI	PUSE	SATI
EASE	0.798					
FC	0.450	0.872				
IRE	0.682	0.363	0.885			
LMSI	0.626	0.538	0.296	0.880		
PUSE	0.505	0.502	0.237	0.601	0.818	
SATI	0.444	0.583	0.573	0.592	0.407	0.746

Note: Ease of use perception connote *(EASE),* Facilitating condition connote *(FC);* Information richness effects connote *(IRE);* LMS Intent to continue usage connote *(LMSI)*; Perceived usefulness connote*(PUSE)* and Perceived satisfaction connote *(SATI)*

Fig 2. Heterotrait–Monotrait Ratio (HTMT).

Hypotheses testing using PLS-SEM

The relationship between the structural model and a range of theoretical variables was investigated using a Smart PLS with maximum

likelihood estimate [62]). Nevertheless, the stated hypotheses were tested. According to earlier research [11]; [63]), the model's predictive significance for the LMS's continuing usage intentions after the pandemic was 58.6 percent, as shown in Table 5.

Table 5: Exhibit R-square models achieved

Matrix	R-Square	R-Square Adjusted
EaseUse_PErception	0.364	0.355
Facilitating_Conditions	0.448	0.439
InfoRichness-Effects	0.506	0.491
LMS_Continuance_Intent	0.586	0.564
Perception _Satisfaction	0.485	0.472

According to the data analysis in this study, nine of the eleven hypotheses were shown to be valid. The results confirmed the study's hypotheses. Four of the five direct regressions on the intent to continue using a learning management system after the pandemic were found to be supported at a p value less or equal to 0.01, indicating that the model is valid. It was rather surprising that the instructors' perception of the ease of use of the LMS after the epidemic was not supported.

The findings revealed that the information richness effect, perceived usefulness, facilitating conditions, and satisfaction perception all have a significant effect on business administration, accounting, marketing, entrepreneurship, and other related areas' instructors' intent to use LMS after the pandemic.

In terms of the relationships between the suggested variables and instructors' intent to continue using the LMS, the results showed that facilitating conditions (FC) have the greatest impact on instructor satisfaction (SATI) (t-stat: 6.701, p 0.000) and are suggested to be the most valuable, followed by usefulness perception (PUSE) (t-stat: 4.830, p 0.0001). Next, was the perception of ease of use (EASE) on information richness effect (IRE) and usefulness perception (PUSE) (t-stat: 4.712, p 0.000) and (t-stat: 4.317, p 0.000) respectively.

Meanwhile, the study also indicated that the usefulness perception (PUSE) on information richness effect towards the instructors' intent to continue using the LMS was (t-stat: 1.532, p 0.126), which values were not supported because the pvalue was greater than 0.05 and the t-statistic was less than 1.96, as recommended [53]. Table 6 summarizes the sample mean, standard deviation error, t-statistic, and p-values for the hypotheses.

Table 6: Standards deviation error, t-statistic, and p-values achieved

Modeling Dimensions			Sample Mean	Standard. Dev. Error	T-Statistics	P-Values	Supported? Yes/NO
EaseUse PErception	→	InfoRichness Effects	0.397	0.083	4.712	0.000	Yes
EaseUse PErception	→	LMS Continuance Intent	0.011	0.092	0.158	0.875	NO
EaseUse PErception	→	Usefulness Perception	0.428	0.096	4.317	0.000	Yes
Facilitating Conditions	→	LMS Continuance Intent	0.332	0.106	3.157	0.002	Yes
Facilitating Conditions	→	Perception Satisfaction	0.575	0.085	6.701	0.000	Yes
InfoRichness Effects	→	LMS Continuance Intent	0.281	0.097	2.858	0.004	Yes
Perception Satisfaction	→	LMS Continuance Intent	0.251	0.095	2.592	0.010	Yes
Usefulness Perception	→	Facilitating Conditions	0.400	0.092	4.223	0.000	Yes
Usefulness Perception	→	InfoRichness Effects	0.149	0.093	1.532	0.126	NO
Usefulness Perception	→	LMS Continuance Intent	0.313	0.076	4.197	00.00	Yes
Usefulness Perception	→	Perception Satisfaction	0.420	0.096	4.310	0.000	Yes

Moreover, Figure 3 shows the structural equation modeling results achieved through the bootstrapped properties in the SmartPLS based on the instructors' intention to accept and use LMS after the pandemic.
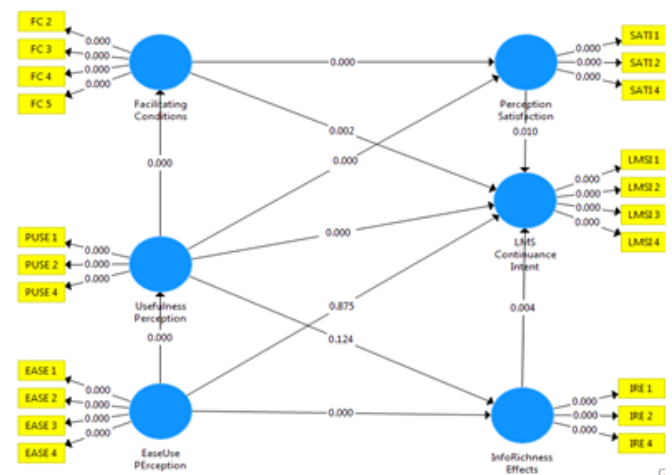

Fig 3 Bootstrapped equation modeling achieved

Discussion of the Results

The study was based on a total of eleven hypotheses and two found not supported. The dimension of this structural equation modelling of intention of Business Administration, Accountancy, Entrepreneurship, Marketing and other Management related instructors included TCT factors (Facilitating conditions and

satisfaction perceptions) [18]. TAM factors (perception of ease of use and usefulness) and effect of information richness. The effect of information richness, facilitating conditions, perception of usefulness and satisfaction have a decisive role in the structural modeling of LMS continuance after pandemic. The relationship effect models findings also indicated the role of facilitating conditions in terms of satisfaction perception, and significant role of TAM two main factors in the study.

The current findings are consistent with previous studies on the effect of information richness, facilitating conditions, usefulness, and satisfaction perceptions in assessing the acceptance of online learning technologies after the pandemic, and the five link assumptions play a significant role in LMS acceptance [38]; [59]; [43]; [44]). According to the direct effect dimensions, the more the availability and reliability of a computer, laptop, phone, printer, and other devices, the greater the likelihood of continued use.

The learning management system improves teaching efficiency. It was hailed as a remarkable teaching tool that allows students to study more productively. This also implied that the overall experience of utilizing it was satisfactory. During the COVID-19 virtual classroom, the LMS matches professionally. It's a better fit for the instructor's plans. Meanwhile, understanding of the learning management system may urge use of it after the COVID-19 pandemic. Furthermore, the report of this study implied that using the LMS following the pandemic would improve their understanding of teaching objectives and results as well as provide simple and relevant information.

In terms of the correlation dimension, the findings suggested that having access to a computer, laptop, or phone with an internet connection would result in a positive experience and encourage continued usage after the pandemic. Also, it is implied that the provision of useful gadgets and other related materials will encourage satisfaction, which may lead to the intention to continue usage and personal academic development of the instructors that are engaged in the virtual classroom in the

amidst of COVID 19 [38]. Nonetheless, the study's findings imply that the concept of usefulness is supported by the fact that usage is easy and straightforward. It's also "user-friendly" in terms of grading and plagiarism detection, which will be beneficial to instructors and students in the course of education [43]).

In a nutshell, this analysis has shown that the success of e-learning platforms will be seen after the outbreak. Since e-learning platforms are simple to use and beneficial, schools and instructors will continue to utilize systems even if face-to-face sessions are reinstated. The level of satisfaction indicated by participants in this study is increased by facilitating conditions and usefulness perception. The other TAM main factors in the relationship with information richness have added more advantages to using these learning management systems (LMSs). The implementation of these technologies in the classroom has a significant impact on educational settings. Furthermore, acceptance increases once the perception of usefulness and information affluence are aligned with the academic tasks. Thus, the study has shown that learning management platforms are an influential means of teaching along with traditional classes due to their specific and unique features.

Contributions and Implications

The findings of this study may be used both conceptually and practically by educationists. The report gives concise and dependable suggestions that may be used to quantify the levels of technological acceptability and consistency among a sample of academics. In terms of practical relevance, the findings of the study may be used in a variety of learning management systems (LMS) that are user-friendly and have features that can benefit the teaching–learning setting. The efficiency relates to the fact that they may provide resources and materials that encourage individuals to gain information more frequently by using their online learning platform.

The findings of this study contributed to and demonstrated that university and college administrators can design LMSs in such a way

that users are motivated to use the system on a regular basis. It is noted that system enhancement is successful based on their provided assumptions, which may be useful from a productivity standpoint. The study's findings underline the need for system managers to closely monitor the intention of using the provided e-learning platforms.

Limitations and recommendation for Future Studies

Despite the fact that the research study added to the literature by considering unique technological models and external elements that have been exploited in previous studies, it has several limitations and acknowledges that the studies chosen are confined to a specific population and cover two time periods, one before and one after the pandemic began. Continued studies might expand the time frame to include studies conducted after the pandemic's impact has faded.

Nevertheless, this concluded study is limited to business administration, accountancy, marketing, and management instructors' intentions towards acceptance and continual usage of LMS after the pandemic fades. The effects of information richness, TAM constructs, and aspects of the UTAUT and TCT models were considered in structuring the model. Future studies can include other factors such as attitude, perceived security, and perceived trust.

Furthermore, the samples are confined to a limited set of instructors from two Southeast Asian countries. Future research may focus on perceptions of ease of use of technology in connection to LMS continuance and usefulness regressed on information richness effect, since two of these assumptions were not supported in this study. Despite this, the findings are collected through questionnaires with closed-ended questions. Future research should explore utilizing a qualitative questionnaire and a data gathering strategy based on interviews or experiences.

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