Online Learners' Continuance Intention: A Theoretical Model

Ma. Florecilla C. Cinches[1], Judith C. Chavez[2], Ruth Love V. Russell[3], Dominic T. Polancos[4]

[1]Liceo de Cagayan University, Philippines (fcinches@liceo.edu.ph)
[2]Lourdes College, Philippines (judith.chavez@lccdo.edu.ph)
[3]Xavier University-Ateneo de Cagayan, Philippines (rrussell@xu.edu.ph)
[4]Liceo de Cagayan University, Philippines (dtpolancos@liceo.edu.ph)

ABSTRACT

Addressing the constraints of time, place, and the physical interaction of class in the face-to-face mode, it took the pandemic for schools to realize the power of technology to transform education. Higher education institutions forcibly shifted their approach to teaching and learning. However, given the novelty of the online platform, several unprecedented outcomes were observed that threatened students' resolve to continue in their respective given learning platforms. This paper attempted to understand online learners' continuance intention in an online learning environment through a theoretical model considering student-student interaction, student-instructor interaction, student-content interaction, course satisfaction, service quality, perceived value, and internet self-efficacy predictors. It established factors affecting online learners' continuous retention among higher education students in three HEIs in a major city of Southern Philippines. A modified questionnaire from Li et al. (2021) underwent validity and reliability checks. It was used to collect information from more than 800 business management college students through an online survey hosted by a professional online survey platform. Only eighteen years old and above students were allowed to participate in the study, given the instruction in the survey instrument. The theoretical model was established with causal-comparative research design, Structural Equation Modeling (SEM) via Amos 20 of SPSS 26. The study reveals that perceived value mediates the influence of course satisfaction and service quality on continuance learning.

Keywords: Course Satisfaction, Service Quality, Perceived Value, Internet Self-efficacy

Introduction

The power of technology to transform education has been a hot topic for over a decade. But it took the pandemic for schools to forcibly shift their approach to teaching and learning. The shift addressed the constraints of time, place, and the physical interaction of class in the face-to-face mode. Online learning allows flexible learning modes that let learners "freely select their learning paths" considering their actual conditions and benefit from contingent teaching (Moore et al., 2011; Li et al., 2021). The first few months of shifting have been difficult, although eventually, schools around the globe proved that online learning could be beneficial and engaging for learners (Cundell & Sheepy, 2018; Khan et al., 2017).

However, given the novelty of the online platform, several unprecedented outcomes were observed that made online instructional delivery quite challenging. A study was conducted on the online learning experiences of 1,641 college students in October 2020 by one of the higher education institutions of this current study. Results revealed some significant issues found to be both beneficial and unfavorable. It included some psychological aspects such as course delivery satisfaction and attitude, technological factors considering students' perception of the usefulness of their learning management system, and students' online competency. Social factors were identified more in their interaction with their teachers, peers, and the modules or learning materials prepared by their teachers (Liceo de Cagayan University [LDCU], 2020). Though the study was not formally conducted for the remaining units of the two HEIs, similar experiences were confirmed to have also been encountered in their respective institutions.

What factors could sustain learners' intention to continue their present academic engagement with their respective HEIs considering the availability of the gadgets and/or devices and the learners' satisfaction with the course delivery and the platforms used? Given the dynamics of digital technologies, understanding why learners intend to continue to use them or not in an online learning environment is important (Yan et al., 2021). Exploring factors that affect higher education students' intention to continue using information systems in their studies could benefit the institutions. This study hopes to contribute a broader understanding of online learners' continuance intention. It may guide higher education institutions to boost their current approaches for students to continue using technologies in their academic programs.

Framework

Continuance Intention. This study focuses on Bhattarcherjee's (2001) Information System Continuance Model (ISCM). Other theories are also mentioned to support the interplay of social, psychological, and technological factors with online learners' continuance and/or behavioral intentions. Bhattarcherjee's theory suggests that after the initial use of the technology, a user's satisfaction and perceived usefulness of an information system may change so that they either repeat the behavior or discontinue the use of the information system (Bhattarcherjee, 2001; Yan et

al., 2021). The theory of reasoned action (Fishbein and Azjen, 1975) is useful for understanding online learners' behavioral intentions toward online learning systems. Decisions to continue or discontinue the use of the students learning management system can be explained by the concept of Fishbein et al. (1975). The theory explains that people's behavioral intentions are influenced by their attitudes and beliefs. Online learners' continuance intention can be swayed by the interplay of attitudes, beliefs, intentions, and actions, which is central to this theory.

Citing Alruwaie et al. (2012), Li et al. (2021) explained that expectation confirmation theory is extensively mentioned in consumer satisfaction, purchase intentions, and brand promotion articles. Similarly, only when learners are satisfied with their course expectations will they continue participating in online learning activities can online learning also take part in its educational role effectively (Li et al., 2021). Additionally, in a Systematic Review of Literature (SLR) of 147 literature, studies identified potential antecedents of continuance intention, which were grouped into four main categories: psychological, technological, social, and behavioral (Yan et al., 2021). Psychological factors included satisfaction, attitude, perceived enjoyment, and trust. For technological factors, perceived usefulness and perceived ease of use were found to have a bearing on continuance intention. Likewise, according to Upton (2013), as cited by Yan et al. (2020), social aspects are more associated with interpersonal relationships and/or social structures and processes. Behavioral factors pertain to habits and other behavioral-related elements, such as frequency of use.

Considering the numerous antecedents of continuance intention identified by the previously mentioned systematic review, this study set its boundaries mostly on factors primarily identified in the results of a previous institutional study mentioned earlier among 1,641 college online learners. Presumed to influence online continuance intention were limited to psychological factors that indicate satisfaction and attitude and social factors that suggests student interaction with other students, instructor, and course content. For this investigation, the perceived value was considered a technological factor was referring to the perceived benefits indicating the usefulness of the learning management system. The behavior aspect was not part of this study since this needs another method of collecting data vis-à-vis more time to observe, such as habit, frequency of use, etc., which goes beyond the timeline of the present study.

Student Interaction. One of the most widely held starting points for discussions about online learning activities is Moore's theory of transactional distance work. It focused on clarifying the world of distance education and was one of the earliest theories related to computer-mediated instruction. He defined transactional distance as "a psychological and communication space to be crossed, a space of potential misunderstanding between the inputs of the instructor and those of the learner" (Moore, 1980). In this study, Moore's distance learning is qualified and limited to using Moore's term for online learning. After all, Moore's theories were also related to computer-mediated instruction, another form of online learning. Further, in this context, three types of interaction were distinguished: learner-content interaction, learner-instructor interaction, and

learner-learner interaction (Moore, 1989). The learner-content interaction is the *student-content interaction* (SCI) between the learner and the study material. In the online context, some of these interactions would mean the student's interactions with webpages, e-books, educational videos, and other media included in an online course (Moore, 1989; Xiao, 2017; Zimmerman, 2012). On the other hand, learner-instructor interaction is the second type and is described as *student-instructor interaction* (SII). It is the exchange between the student and subject matter expert who prepared the content or the person acting as the instructor. The learner-learner interaction is the third type, termed *student-student interaction* (SSI), and is reminiscent of the classroom discussions and group projects of traditional instruction. In distance education, Moore (1989) contended, this type of interaction takes place between learners through discussion board postings, online study groups, or computer-mediated chats (Moore, 1989; Sutton, 2001). Moore stressed the importance of including all three types of interaction for any distance learning course, regardless of the medium or media used. However, some studies indicated that the amount of interaction that learners have with the content is most important to student satisfaction in web-based learning, compared with learner-learner interaction and learner-instructor interaction (Chejlyk, 2006; Keeler, 2006, as cited by Kuo et al. (2013). Perceiving the delivery of the entire course can be related to student interaction and is contingent on the decision of the students to continue using the learning platform to pursue their respective courses.

Course Satisfaction. Bhattacharjee's expectation confirmation model assumed that users' continuance intention of information system use is affected by their satisfaction with their previous technology experience. Citing Kotler (1999), Yan et al. (2021) held that satisfaction is a person's feeling of pleasure or disappointment which resulted from comparing a product's perceived performance or outcome against his/her expectation. In the academic setting, this would refer to the satisfaction of students' experience using the learning information system. In this current study, course satisfaction refers to the feeling of pleasure or disappointment with the curriculum provided through the online learning management system of the institutions. Therefore, course satisfaction refers to the student's satisfaction with the extent to which the online learning service provides the course needed to improve their skills and high expectations on the reliability of the institution's course delivery with the learning platform used. With the ECM of Bhattacherjee (2001), students' course satisfaction is associated with the perceived value or the perceived benefits. Studies show that satisfaction with the information system used substantially affects continuance intention (Lu et al., 2010; Huang & Hsiao, 2012). In their research model, continuance intention explained more than 70 percent of satisfaction variance. Also, cited by Lu et al. (2019), Halilovic and Cicic (2013) revealed that perceived usefulness, confirmation, and support conditions are the main factors influencing users' satisfaction. Conditions of support can be described as how the course was delivered vis-à-vis service quality

Service quality. Another variable that links to learners' continuance intention is service quality, described as "a global judgment or attitude relating to the superiority of a service" (Parasuraman et al. 1985). In this current study, service quality refers to the support extended to the learners in

the online learning platform, such as giving users the necessary knowledge on the learning management system and providing excellent service and quick response to students' queries. Zeithaml et al. (1996) proposed that service quality is one of the main predictors of repetitive behavior intentions. The better the user perceives service quality, the higher the possibility of that user continuing to use the information system in the future. Hu et al. (2009) verified a positive correlation between service quality and continuance intentions. In addition, many studies have proposed that when users perceive that an information system provides perfect service, they will have a strong sense of satisfaction toward that information system and intend to reuse it in the future (Chiu et al., 2007; Chen, 2007; Roca 2006; Zheng 2012; Zhou 2013; Chiu et al., 2005). Egedigwe (2015) used Parasuraman's service quality model to measure the quality of service in an information system. Service quality was used to differentiate the instructors' perceived value and their satisfaction with the quality of the cloud computing system. Results revealed that some demographics could be sources of differentiating opinions on the perceived value of cloud computing. On the other hand, Vajrapana (2019) studied the effect of e-service quality on perceived value, satisfaction, and loyalty using confirmatory factor analysis. It was found that e-service quality had positive relationships with the dependent variables, one of which was perceived value.

Perceived Value. According to Zeithamil (1988), as cited by Zegarra et al. (2020), perceived value and continuance intention established the basis for conceptualizing perceived value. The authors describe it as the trade-off between perceived benefits and perceived sacrifice, thus, producing an overall assessment of the utility of a product or service. The perceived benefits refer to the advantages that users gain from the service. In contrast, perceived costs refer to the sacrifices made in this process (Kim and Gupta, 2007), such as money, time, energy, and mental transaction costs (Kaasinen, 2005). In this current study, the perceived benefits were indicated with the usefulness of the learning management system in gaining & improving one's skills and knowledge.
In contrast, perceived costs are implied by one's effort and other investments made to attain the goals of one's chosen course. In a study, students' expectations of the courses were considered perceived value before deciding to continue online classes, which strongly positively influenced online learners' continuance intentions. It further showed that perceived value is a mediator between continuance intention and course quality, service quality, and interaction (Li et al., 2020). However, in a conceptual model of consequences and antecedents of continuance intention framed after a thorough systematic literature review, Yan et al. (2021) contend that perceived value is a mediator. The model reflected mediators between the antecedents and continuance intention. It identified the information system's perceived value and perceived usefulness as mediators.

Internet self-efficacy. In this study, Internet self-efficacy refers to the belief in one's capability to organize and execute Internet-related actions required to accomplish assigned tasks (Eastin & LaRose, 2000). There are two reasons to include Internet self-efficacy as a predictor of online student satisfaction, eventually leading to continuance intentions. First, online learning relies on Internet delivery through various activities such as group discussions, collaborative projects, and

communication with significant others in the learning process (Roach & Lemasters, 2006). Technical problems while using the Internet may cause student frustration and dissatisfaction (Choy, McNickle, & Clayton, 2002**).** Thus, online learners must possess high internet self-efficacy to complete required tasks for an online course delivered through the Internet. Second, Internet self-efficacy, as one of the three self-efficacy constructs in web-based instruction, is less addressed than academic self-efficacy or computer self-efficacy. The impact of Internet self-efficacy on student satisfaction is scarce and inconclusive. Eastin and LaRose (2000) averred that Internet self-efficacy positively correlates with expected outcomes, including continuance intentions.

The discussed arguments pointed out the constructs that bear on continuance intention. Figure 1 shows the research model and explains the antecedents of continuance intention directly predicted by service quality, course satisfaction, student content interaction, student-instructor interaction, and internet self-efficacy but may be mediated by perceived value. Based on the literature reviewed, this study investigates the mediating effect of perceived value on the influence of student interaction, course satisfaction, service quality, and internet self-efficacy on the continuance intention of online users.

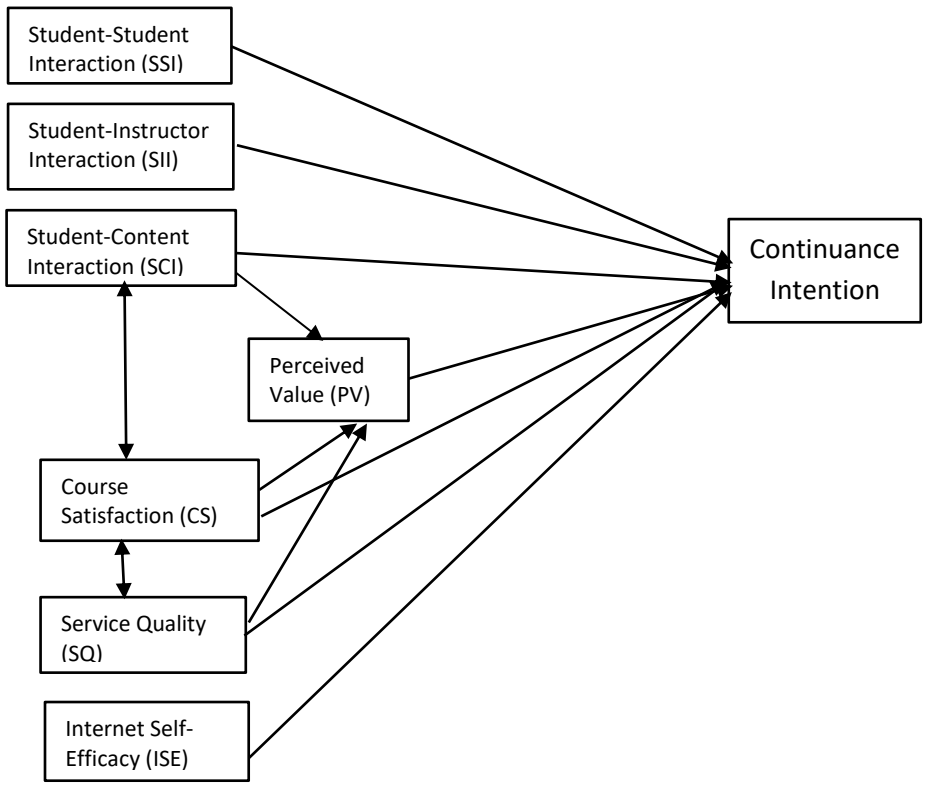

Figure 1. The Research Model

Hypothesis 1: Continuance intention can be predicted by student-student interaction, student-instructor interaction, student-content interaction, course satisfaction, service quality, perceived value, and internet self-efficacy.
Hypothesis 2: The influence of student-content interaction, course satisfaction, and service quality on continuance intention is mediated by the students' perceived value of the online learning system.

Objective of the Study

This paper attempted to understand online learners' continuance intention (CI) in an online learning environment given the selected variables through a theoretical model and established factors affecting online learners' continuance retention among business management students in three HEIs in a major city of Southern Philippines.

Methodology

This study was conducted in three private HEIs in Northern Mindanao, Philippines, and randomly participated in by more than 800 business management students. The Colleges of Business were chosen from among the three HEIs because, despite the pandemic, the colleges have fairly retained their enrollees. Data were collected between May-July 2021 with a retrieval rate of 70% through a partly modified instrument from the study of Li, Nishimura, Yagami, & Park (2021) entitled "An Empirical Study on Online Learners' Continuance Intentions in China." All the constructs from the said study were adapted, and another construct was integrated into the instrument. The constructs of this present study were found to be valid not only because of their theoretical support but also because the previous institutional research conducted by one of the HEIs pointed to these constructs as critical to student engagement in online learning. The five-point scale instrument was likewise content validated by teachers engaged in online business courses, supported by the existing literature of this present study. Reliability was conducted using Cronbach's alpha and was found to have acceptable internal consistency given the reliability coefficients. The constructs included student-student interaction (SSI) (α=.89), student-instructor interaction (SII) (α=.89), student-content interaction (SCI) (α=.90), course satisfaction (CS) (α=.93), service quality (SQ) (α=.91), perceived value (PV) (α=.92), internet self-efficacy (ISE) (α=.87), and continuance intention (CI) (α=.94). It comprised of 8 constructs and 32 related items with a 5-point scale, where 5 means strongly agree, 4 is moderately agree, 3 is agree, 2 is disagree and 1 is strongly disagree. The data collecting tool was designed based on the modified instrument and existing literature. From the agreement scale, the interpretation of the responses was based on the frequency of experience. This was distributed as an online survey hosted by a professional online survey platform through Google Forms. The questionnaire was organized using mean of the mean with the following scale response. Table 1 shows the scoring procedure.

Table 1. Scoring Procedure

Range	Responses	Interpretation*
4.67 - 5.00	Strongly Agree	Always
3.67 - 4.66	Moderately Agree	Often
2.67 - 3.66	Agree	Sometimes
1.67- 2.66	Disagree	Rarely
1.00- 1.66	Strongly Disagree	Never

*Source: Vagias, Wade M. (2006). Likert-type scale response anchors. Clemson International Institute for Tourism & Research Development, Department of Parks, Recreation and Tourism Management. Clemson University.

The study employed a causal-comparative research design. Furthermore, Structural Equation Modeling (SEM) via Amos 20 of SPSS 26 established path coefficients for further analysis of interrelationships of the constructs as advanced by the review of related studies and literature. Research results were presented by readings on Mediation and SEM as reported by Kenny, Kaniskan, and McCoach, (2014) and Kenny (2012). The estimation procedure utilized "model fit", "strength of the postulated relations between variables of interest", and "reliability of the parameter estimates."

Results and Discussion

Descriptives. Table 2 shows the descriptive data of the 839 students, including scale reliabilities, means, standard deviations, and zero-order correlations for all the study variables. The different scales were tested for internal consistency using Cronbach's alpha (α). As earlier presented in the Methodology, the α coefficient ranged from 0.94 to .87, which implies that the scales used in this study are reliable, measuring the constructs of what they intend to measure. Furthermore, Table 2 inter-correlations revealed that the constructs were significantly interrelated.

Table 2. Scale Reliabilities Means, Standard Deviation, and Inter- Correlation

Variable	α	$\bar{x}$	SD	1	2	3	4	5	6	7
1. Student-Student interaction (SSI)	.89	3.56	.79							
2. Student-Instructor interaction (SII)	.89	3.48	.76	.65**						
3. Student-Content interaction (SCI)	.90	3.23	.93	.57**	.75**					
4. Course Satisfaction (CS)	.93	3.34	.86	.58**	70**	.82**				
5. Service Quality (SQ)	.91	3.21	.87	.58**	.73**	.83**	.86**			
6. Perceived Value (PV)	.92	3.18	.91	.55**	.66**	.81**	.86**	.88**		
7. Internet Self-Efficacy (ISE)	.87	3.62	.73	.53**	.52**	.44**	.52**	.54**	.51**	
8. Continuance Intention (CI)	**.94**	**2.92**	**1.1**	.38**	.49**	.62**	.64**	.69**	.74**	.35**

Correlations (n=839); **Correlation is significant at the 0.01 level (2-tailed)

From among the constructs, *continuance intention* (CI) had a relatively widely dispersed response (SD=1.1). Since CI is the focus of the study, an emphasis on the descriptive data for CI can better understand the dispersed responses. Table 3 shows the descriptive data on the student response profile of the CI scale.

Table 3. Descriptive Data on the Responses Profile of Students on Continuance Intention

Range	Responses	Interpretation*	Frequency	Percentage
4.67 - 5.00	Strongly Agree	Always	78	9.3
3.67 - 4.66	Moderately Agree	Often	161	19.2
2.67 - 3.66	Agree	Sometimes	307	*36.6*
1.67- 2.66	Disagree	Rarely	201	*24.0*
1.00- 1.66	Strongly Disagree	Never	92	*11.0*
Total			839	100.0

The table shows that with a scale of 1 to 5, the mean scores of the students' responses were generally in the range of 2.67 to 3.66, which is interpreted as 'agree' or 'sometimes.' Except for Continuance Intention (CI), standard deviations, as shown in Table 2, were small, implying that most of the responses were similar and nearer to the mean and were good estimators of the population mean. The data also implied that the responses were in close agreement with each other and that the students' perceptions were most likely the same. However, the data show that CI has the lowest mean ($\bar{x}$ =2.92, SD=1.1) with a relatively higher standard deviation, implying that students' responses are highly dispersed with a standard deviation of 1.1. It implies that the CI responses of the business students from the three HEIs are not comparable.

The CI item loadings are: 1) I will continue to pursue courses online in the future, 2) I will recommend others to pursue learning courses online in the future, and 3) I will frequently pursue courses online in the future. The data further disclosed that generally, for continuance intention, 36.6% answered agree or 'sometimes' and more than one-third (*24% for disagree; 11% for strongly disagree*) rarely answered and 'strongly disagree' or never, implying that generally there are 293 respondents who strongly disagree and disagree about the possibility of continuing online learning. The 'agree' response can also indicate either wanting to continue sometimes or not implying ambiguity on this behavioral intention.

The authors surmised that the divergence might come from the varying learning platforms of the three institutions in this study; it may come from their status economically or geographically. It may also come from other demographics, which was established in Egedigwe's (2015) study that some demographics can be sources of differentiating opinions on the perceived value of cloud computing. These considerations were not part of the study's objective since the population's assumption was that the business student participants were currently using information technologies or information systems in their academic programs. Furthermore, in Table 2, inter-correlations revealed that these variables were significantly interrelated, an important procedure for initially testing mediation.

The Best Fit Model that Explains Continuance Intention

The first Hypothesized Model 1 states that *continuance intention can be predicted by the student-student interaction, student-instructor interaction, student-content interaction, course quality,*

service quality, internet self-efficacy, and mediated by perceived value was not acceptable with of X^2=10.62, which is more than the acceptable ratio, and the value of RMSEA (.105), which is also beyond the acceptable limits.

In finding the best fit model, items with no significance were deleted from the measurement model, as Awang (2012) recommended in his SEM Handbook. Thus, after a series of modifications, using string constraint parameters on regression weights estimates, a series of modifications were done using the parameters that resulted in finding the default model for Hypothesized Model 1.

			Estimate	S.E.	C.R.	P	Label	
PV	<---	SCI	.156	.029	5.328	***		
PV	<---	SQ	.539	.034	16.061	***		
PV	<---	CS	.344	.033	10.493	***		
PV	<---	ISE	.058	.023	2.566	.010		
PV	<---	SII	-.119	.029	-4.037	***		
PV	***<---***	***SSI***	***.004***	***.023***	***.189***	***.850***		***Not Significant***
CI	<---	SQ	.253	.074	3.442	***		
CI	<---	PV	.755	.066	11.385	***		
CI	***<---***	***ISE***	***-.052***	***.044***	***-1.189***	***.234***		***Not Significant***
CI	***<---***	***SSI***	***-.049***	***.044***	***-1.102***	***.271***		***Not Significant***
CI	***<---***	***SII***	***-.043***	***.057***	***-.760***	***.447***		***Not Significant***
CI	***<---***	***SC***	***.077***	***.057***	***1.347***	***.178***		***Not Significant***
CI	***<---***	***CS***	***-.092***	***.067***	***-1.372***	***.170***		***Not Significant***

Figure 1. Regression Weights: (Group number 1 - Default model for Hypothesized Model 1)

The figure shows that *student-student interaction* (SSI) does not significantly influence *perceived value* (PV); *continuance intention* (CI) is not significantly affected by *internet self-efficacy* (ISE), *student-student interaction* (SSI), *student-instructor interaction* (SII), *student content interaction* (SCI) and *course satisfaction* (CS). Thus, hypothesized model 2 was found acceptable in the set criterion.

Table 3. Results of the Calculation of Overall Model Fit Indices of the Hypothesized Model

Models & Fit Criterion	Absolute Fit		ncremental Fit				Parsimonious Fit
	RMR	RMSEA	GFI	CFI	NFI	TLI	X^2/df
Hypothesized Model 2	.008	.039	.997	1.00	1.00	.995	6.858/3 = 2.29
Standard Fit Criterion	*Nearing Zero*	*<.06*	*> .90*	*>.90*	*>.90*	*> .90*	*Ratio of X^2 to df ≤ 2*

Hypothesized model 2 confirmed that the influence of student-content interaction, course satisfaction, and service quality on continuance intention is mediated by the students' perceived value of the online learning system. Based on the standard criterion in Table 3, the second

hypothesized model was found to be the best fitting model given the values in Table 3 where the chi-square value (X^2= 2.29,); NFI, GFI, CFI, that were >0.90 and the RMR (0.008), approaching 0. The root mean square of approximation or RMSEA is 0.039.

Figure 2 shows the best-fit model with path coefficients. The figure shows the path diagram representing the structural equation model. *Perceived value* and *continuance intention* are endogenous (effect) variables, while *student-content interaction, course satisfaction, service quality,* and *internet self-efficacy* are the exogenous (cause) variables. It is also observed that *perceived value* is both a cause-and-effect variable. It further discloses that *perceived value* is the direct cause and bears the most substantial influence of *continuance intention.* Likewise, it is also the effect of *student content interaction, course satisfaction,* and *service quality.* The model further reveals that 55% of the variation in *continuance intention* can be predicted by *perceived value* and *service quality* as cause variables. On the other hand, 82% of the perceived value is explained by *student content interaction, course satisfaction, service quality, and internet self-efficacy,* or 18% cannot be accounted for and therefore can be potential in exploring further studies in determining other factors that may have a bearing on perceived value in the context of perceived benefits and usefulness of the online learning system used.

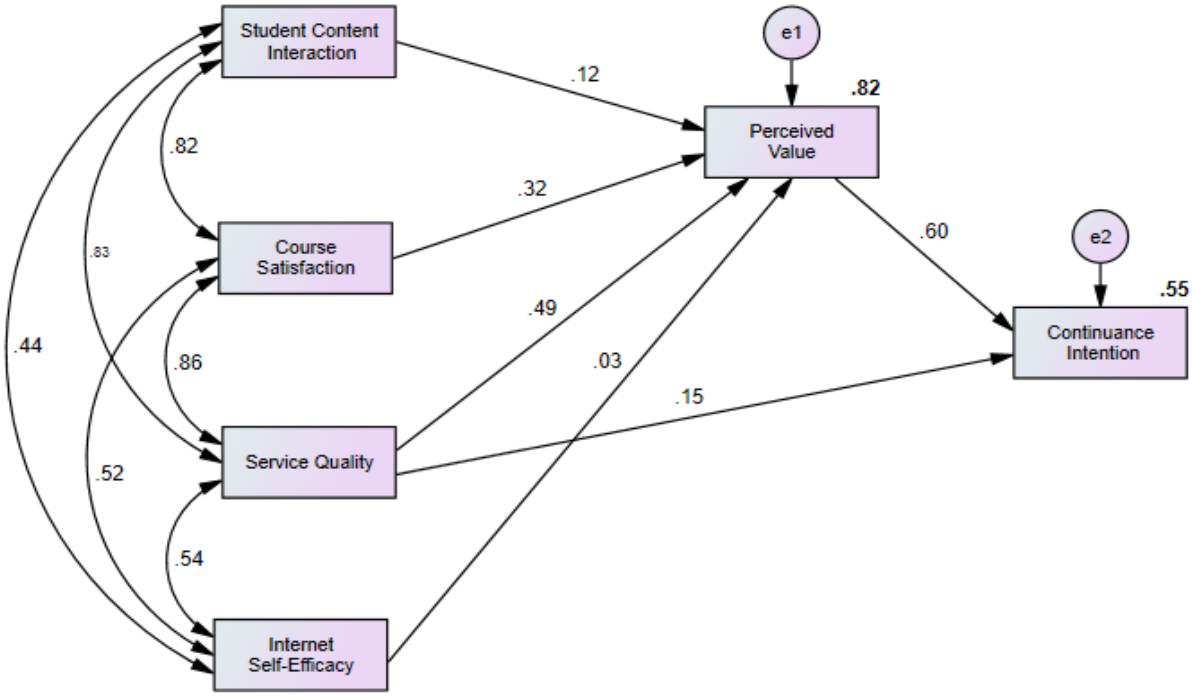

Figure 2. Hypothesized Model 2: The Best Fit Model

The structural equation for *continuance intention is* (CI = 0.60PV + 0.15SQ). It further means that 60% of the variation in CI can be explained by perceived value (PV), while 15% can be

explained by service quality (SQ). It further means that perceived value and service quality affect only 75% (.60+.15) of the students' behavioral intention to continue in their present learning management system, which comprises the 25% factor/s that may bear on continuance intention may be taken up in another study. For *perceived value, the* structural equation (PV = .49SQ + .32 CS + .12SCI + .03ISE). It likewise means that 49% of the *perceived value* (PV) can be explained by service quality (SQ), 32% by course satisfaction (CS), 12% by *student content interaction* (SCI), and 3.1% by *internet self-efficacy* (ISE). It is also important to note that student-content interaction covaries with course satisfaction (CVR =.82), and course satisfaction is also associated with service quality (CVR=.86). This means that course satisfaction is associated with student-course interaction as well as service quality. A correlation was also observed between service quality and student-course interaction (CVR=.83).

By its literature review, this study assumed that students' online continuance intention is directly influenced by the student learning interactions, their course satisfaction delivered through the IS, the perceived value of the online learning system, and their internet self-efficacy. However, initial assumptions were not confirmed. Instead, the perceived value was more influential in sustaining their continuance intention in using the online learning system to pursue their academic programs. This implies that perceived benefits on the usefulness of the students' learning management system outweigh student learning interactions, course satisfaction, and service quality in affecting the students' decision for continuance intention. The more they perceived the online learning platform was working to their advantage, the greater the chances for their continuance intention. For this investigation, the perceived value was considered a technological factor is referring to the perceived benefits indicating the usefulness of the learning management system. In a study, students' expectations of the courses can be considered perceived value before deciding to continue online classes, which strongly influences online learners' continuance intentions. Their study further revealed that perceived value is a mediator between continuance intention and course quality, service quality, and interaction (Li et al., (2020). The crafted conceptual model of the consequences and antecedents of Yan et al. (2021) shows mediators between the antecedents and continuance intention, including the perceived value and perceived usefulness of the information system used.

That perceived value can be strongly influenced by service quality and course satisfaction is also a finding of Egedigwe's (2015) study that used service quality to differentiate the instructors' perceived value and satisfaction with the quality of cloud computing systems. Another investigation studied the effect of e-service quality on perceived value, course satisfaction, and loyalty. Vajrapana (2019), in confirmatory factor analysis, found that e-service quality had positive relationships with the dependent variables, one of which was perceived value. Course satisfaction meant students' satisfaction with the quality of course delivery with the platform used. With the ECM of Bhattacherjee (2001), the perceived value or the perceived benefits is contingent on the students' course satisfaction. The findings of this present study cannot fully confirm the previous studies that revealed satisfaction with information system use has the most substantial direct effect

on continuance intention (Lu et al., 2010; Hsiao, 2012). It may imply that demographics such as students' use of gadgets/devices and economic and geographical considerations may be considered sources of differentiating opinions regarding the student respondents' desire to continue using technologies in their academic programs.

The theory of reasoned action (Fishbein and Azjen, 1975) clarifies that persons' behavioral intentions are influenced by their attitudes and beliefs. The theoretical model of this study explains that students' behavioral intentions to continue or not use their respective learning management systems are strongly influenced by their perceived value of the online learning system. It is likewise affected by service quality, course satisfaction, and student content interaction.

Conclusion

This paper explored understanding learners' continuance intention in an online learning environment through a theoretical model and established factors affecting online learners' continuous retention among higher education students.

Uncovered by this study are crucial dimensions of students' perceived value of the online learning system used by their institutions to stay in the program with their current online learning mode. Factors such as service quality and course satisfaction are primarily the influencing elements that shape the perceived benefits and usefulness of the information system used vis-à-vis perceived value which directly influences their intention to continue using the online learning system.

One notable conclusion is that the students' response to quit or not is ambivalent, with more than one-third of the sampled population rarely or never considering continuance intention, which poses a challenge to the institutions to explore other variables determinant of continuance intention.

It is also worth mentioning that the theoretical model generated in this study disclosed the need for further studies on plausible factors that may affect continuance intention considering that only 75% were accounted for by perceived value and service quality.

This study recognizes that two of the identified student-learning interactions, specifically, student-student interaction and student-instructor interaction, previously discussed as part of the assumptions, did not figure out significant dimensions of continuance intention. Perceived value was not affected by student-student interaction or student-instructor interaction. This study recognizes its limitation in that it could not explain this inclination. Thus, further research must be undertaken to provide insight into this matter.

Recommendations and Implications

The findings of this study elucidate several areas that future actions can address. It may do well for the institutions to review their current approaches to maintaining the efficiency and effectiveness of their online learning system, especially in delivering the course and ensuring optimum user satisfaction.

With the students' ambivalent response to continuance intention, it behooves HEIs to seriously study more on the variations caused by these answers to be more responsive and relevant. Thus, it is suggested that demographics such as students' use of gadgets/devices, economic and geographical considerations may be considered as causes of variation in their continuance intention. It likewise points to the need to expand the population study across other institutions' programs to increase the generalizability of the finding.

Since this study also recognizes the limitation to explaining the notable dimensions of student-student and student-instructor interactions to continuance intention, research may consider the vital student-student and student-instructor interactions effects on online learning and the quality of information systems in information systems in achieving online learning objectives. It may also apply to open innovation strategies to comprehensively understand its effects on online learning and open innovation performance. The study likewise admits the limitations of the variables that may have a bearing on continuance intention. Future studies may explore other variables, such as instructors' online pedagogy & system operation ability or diverse learning platform, to broaden the perspectives on continuance intention. Another future study may include the behavior aspect as an antecedent of continuance intention using the quantitative or qualitative approach or mixed method.

Philippine higher academic institutions continue to reinvent themselves innovatively to stay relevant during and even in the aftermath of the pandemic. While these efforts are laudable moves, it is likewise crucial for HEIs to take higher cognizance of the digital divide among its stakeholders. As the schools transitioned from the conventional mode of learning to online delivery, many students struggled not only in academics. Still, they were also constrained with their internet skills, access, and suitable gadget for their learning. If this phenomenon remains unattended, it may increase the learners' academic deficits and eventually backlash the whole educational system.

As online learning system is here to stay, HEIs must continue to ground their efforts to utilize the power of technology to transform education fully; address the issue of the digital divide to ensure that all can access the right to education; to understand further the dynamics of keeping students focused and nurture their desire to sustain the use of online learning system to pursue their academic aspirations.

References

Bhattacherjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model, *MIS Quarterly*, 25 (3), 351-370. https://doi.org/10.2307/3250921

Chang, C., Liang, C., Yan, C., & Tseng, J. (2013). The impact of college students' intrinsic and extrinsic motivation on continuance intention to use English mobile learning systems. *The Asia - Pacific Education Researcher, 22*(2), 181-192. https://doi.org/10.1007/s40299-012-0011-7

Chen, C. (2007). Information technology, organizational structure, and new product development---The mediating effect of cross-functional team interaction. *IEEE Transactions on Engineering Management*, *54(4),* 687-698. https://doi.org/10.1109/TEM.2007.906831

Cheilyk (2006) and Keeler (2006) in Chia-Chen, C., Chun-Hsiung, L., & Kuo-Lun Hsiao. (2018). Comparing the determinants of non-MOOC and MOOC continuance intention in Taiwan. *Library Hi Tech, 36*(4), 705-719. http://dx.doi.org/10.1108/LHT-11-2016-0129

Chiu, C.M., Chiu, C.S., & Chang,C.H. (2007). Examining the integrated influence of fairness and quality on learners' satisfaction and Web-based learning continuance intention. *Information Systems Journal, 17,* 271-287. https://doi.org/10.1111/j.1365-2575.2007.00238.x

Chiu, C.M., Hsu, M.H., Sun, S.Y., & Lin, T.C. (2005). Usability, quality, value and e-learning continuance *Decisions. Computers and Education, 45(4),* 339-416. http://dx.doi.org/10.1016/j.compedu.2004.06.001

Clayton, B. & Choy, S. & McNickle, C. (2002). Learner expectations and experiences: An examination of student views of support in online learning. https://www.researchgate.net/publication/37377463_Learner_expectations_and_experiences_an_examination_of_student_views_of_support_in_online_learning

Cundell, A., & Sheepy, E. (2018). Student perceptions of the most effective and engaging online learning activities in a blended graduate seminar. *Online Learning, 22(3),* 87-102. https://doi:10.24059/olj.v22i3.1467

Eastin, M. & LaRose, R. (2006). Internet self-efficacy and the psychology of digital divide. *Journal of Computer-Mediated Communication, 6(1).* https://doi.org/10.1111/j.1083-6101.2000.tb00110.x

Egedigwe, E. (2015). *Service Quality and Perceived Value of Cloud Computing-Based Service Encounters: Evaluation of Instructor Perceived Service Quality in Higher Education in Texas. Dissertation in Doctor of Philosophy in Information Systems (doctoral dissertation)*. NSU, Florida, USA. https://www.proquest.com/docview/1709243664/fulltextPDF/956E4F01943243FCPQ/1?accountid=139409

Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Gupta, S. & Kim, H. The moderating effects of transactions experience on the decision calculus in online purchase. *International Journal of Electronic Commerce, 12(1),* 127-158. http://dx.doi.org/10.2753/JEC1086-4415120105

Hariguna, T., & Akmal. (2019). Assessing students' continuance intention in using multimedia online . *TELKOMNIKA, 17*(1), 187-193. http://dx.doi.org/10.12928/telkomnika.v17i1.10328

Huang, X. & Hsiao, E.L. (2012). Synchronous and Asynchronous Communication in an Online Environment: Faculty Experiences and Perceptions. *Quarterly Review of Distance Education, 13*(1), 15-30. https://www.learntechlib.org/p/131977/

Hu, H., Kandampully, J., & Devi, J. (2009). Relationships and impacts of service quality, perceived value, customer satisfaction, and image: An Empirical Study. *The Service Industries Journal. 29.* 111-125. https://doi.org/10.1080/02642060802292932

Ifinedo, P. (2007). Investigating the antecedents of continuance intention of course management systems use among Estonian undergraduates. *International Journal of Information and Communication Technology Education, 3(4),* 76-92. https://doi.org/10.4018/jicte.2007100107

Kaasinen, E. (2005). User acceptance of mobile technology- services-value, ease of use, trust and ease of Adoption. *ESPOO 2005. VTT Publications 566*, 151- 164. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.97.455&rep=rep1&type=pdf

Khan,A., Egbue, O., Palkie, B., & Madden, J., (2017). Active learning: Engaging students to maximize learning in an online course. *The Electronic Journal of e-Learning, 15(2),* 107-115. https://eric.ed.gov/?id=EJ1141876

Kenny, D. A., & Milan, S. (2012). Identification: A nontechnical discussion of a technical issue. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling*, 145–163. The Guilford Press. https://psycnet.apa.org/record/2012-16551-009

Kenny, D., Kaniskan, B., & Mccoach, D. B. (2014). The Performance of RMSEA in Models with Small Degrees of Freedom. Sociological Methods & Research. https://doi.org/10.1177%2F0049124114543236

Kuo, Y-C., Walker, A., Belland, B., Schroder, K (2013). A predictive Study of Student Satisfaction in Online Education Programs. *The International Review of Research in Open and Distance Learning, 14(1),* 16-39. https://files.eric.ed.gov/fulltext/EJ1008076.pdf

Li, Y.; Nishimura, N.; Yagami, H.; & Park, H.-S. (2021). An empirical study on online learners' continuance intentions in China. *Sustainability 2021, 13(2)*, 889. https://doi.org/10.3390/su13020889

Liceo de Cagayan University (2020) *Survey on Online Learning Experience of Liceo de Cagayan University Students: An Institutional Study.* University File.

Lu, Y., Bin, W., & Yaobin, L. (2019). Understanding key drivers of MOOC satisfaction and continuance intention to use. *Journal of Electronic Commerce Research 20(2),* 13. https://scholarworks.utrgv.edu/cgi/viewcontent.cgi?article=1026&context=is_fac

Moore, M. (1997). "Theory of transactional distance." Keegan, D., ed. Theoretical principles of distance education (1997), *Routledge*, 22-38. http://www.c3l.uni-oldenburg.de/cde/found/moore93.pdf

Moore, M. G. (1989). Editorial: Three types of interaction. *American Journal of Distance Education, 3(2)*, 1-7. https://doi.org/10.1080/08923648909526659

Parasuraman, A. & Grewal, D. (2000). The impact of technology on the quality-value-loyalty chain: A research agenda. *Journal of the Academy Marketing Science, 28(1)*, 168–174. https://doi.org/10.1177/0092070300281015

Roach, V. & Lemasters, L. (2006). Satisfaction with Online Learning: A Comparative Descriptive Study. Journal of Interactive Learning, 5(3) https://www.researchgate.net/publication/254725921_Satisfaction_with_Online_Learning_A_Comparative_Descriptive_Study

Roca, J., Chiu, C. & Martínez López, F. (2006). Understanding e-Learning continuance intention: An extension of the technology acceptance model. *International Journal of Human-Computer Studies, 64(8),* 683-696. https://doi.org/10.1016/j.ijhcs.2006.01.003

Sutton, L. (2001). The principle of vicarious interaction in computer mediated communications. International Journal of Educational Telecommunications, 7(3), 223-242, Norfolk, VA: Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/9534/

Vajrapana, P. (2019). *The effect of e-service quality on perceived value, satisfaction and loyalty: An updated e-service quality scale for an online shopping context*.[Dissertation in Doctor of Philosophy-Information and Media (doctoral dissertation). Michigan State University, USA]. https://www.proquest.com/dissertations-theses/effect-e-service-quality-on-perceived-value/docview/2315243577/se-2?accountid=139409

Xiao, F., & Junhong Xiao (2017) Learner-content interaction in distance education: The weakest link in interaction research, *Distance Education, 38:1,* 123-135, DOI: 10.1080/01587919.2017.1298982 Free access link: http://www.tandfonline.com/eprint/ShEpFrhTPspXUvugM3pc/full

Yan, M., Filieri, R., & Gorton, M. (2021). Continuance intention of online technologies: A systematic literature review. *International Journal of Information Management, 58, 102315.* https://doi.org/10.1016/j.ijinfomgt.2021.102315

Yang, M., Shao, Z., Liu, Q., & Liu, C. (2017). Understanding the quality factors that influence the continuance intention of students toward participation in MOOCs. *Educational Technology, Research and Development, 65*(3), 1195-1214. https://doi.org/10.1007/s11423-017-9513-6

Zeithaml, V.A. (1988) Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing, 52(3),* 2–22. https://doi.org/10.2307/1251446

Zegarra, M., Mafe, C. & Blas, S. (2020). The effects of mobile advertising alerts and perceived value on continuance intention for branded mobile apps. *Sustainability 2020, 12 (17)*, 6753. https://doi.org/10.3390/su12176753

Zheng, R. (2012). Evolving psychological and educational perspectives on cyber behavior. IGI Global. https://doi.org/10.4018/978-1-4666-1858-9

Zimmerman, Barry & Schunk, Dale. (2012). Motivation: An essential dimension of self-regulated learning. *Motivation and Self-Regulated Learning: Theory, Research, and Applications.* 1-30. https://doi.org/10.4324/9780203831076

Zhou, T. (2013). An empirical examination of the determinants of mobile purchase. *Personal and Ubiquitous Computing, 17(1),* 187-195. https://doi.org/10.1007/s00779-011-0485-y