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Learning Management System Acceptance Analysis Using Hedonic Motivation System Adoption Model

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Abstract

Online learning using LMS (Learning Management System) results in demotivation for Lecturers and Students. This study aims to explore the relationship between the contentment of using LMS with the behavioural intentions and user focus while using the LMS. The present study employed the user's perception of using LMS with HMSAM (Hedonic Motivation System Adoption Model) as the theoretical basis. The quantitative research method employed a questionnaire as a data collection method. The collected data were analysed statistically using the PLS-SEM method with SmartPLS 3.2.9 application. The results of the study showed that of the 10 (ten) hypotheses, 9 (nine) were accepted, and 1 (one) was rejected. In particular, the hypothesis indicating excitement affects behavioural intentions using the LMS shows a t-statistic value of 1.887 (t-statistics < t-value) hence being rejected. This study also provides recommendations for LMS development based on usability, curiosity, excitement, and control factors.

Keywords: LMS, HMSAM, PLS-SEM, Online learning

1. Introduction

The Covid 19 pandemic became a catalyst for changes in learning activities in Indonesia. This is in line with the occurrence of Digital Transformation in higher educational institutions[1]. This phenomenon makes LMS (Learning Management System) a necessity for higher education institutions to carry out virtual classes[2]. However, virtual classes of online learning provide a challenge for teachers in designing and providing successful learning experiences in demanding situations[3]. Compared to classroom learning, online learning requires higher technical skills and learning motivation[4]. Online learning would often look unappealing and bore the students. Moreover, ironically, the flexibility of time to study also makes it difficult to find the right time to study [5]. This phenomenon results in demotivation of lecturers and students during the learning process, also affecting the quality of education in higher educational institutions in Indonesia.

A research[6] had discussed the perception and use of a gamified learning environment based on the perspective of hedonic motivation using the HMSAM (Hedonic Motivation System Adoption Model). Although, it had not focused on the LMS as an integral part of the online learning process and only considered the perspective of students. Furthermore, another research[7] had aimed to look at student perceptions about using Google Classroom as a mobile learning platform using UTAUT2 as a theoretical basis. However, it was limited in generalising Google Classroom users because it only looked at students' perspective. Also, this research also did not analyse the demographic factors of Google Classroom users. Furthermore, another study[8] used TAM (Technology Acceptance Model) to analyse the acceptance of NUADU as an e-learning platform at private schools in Balikpapan, Indonesia. Although it was limited to less than 100 respondents and only focused on teachers' perspectives as the users of the system.

Previous studies using HMSAM as a theoretical basis have not specifically discussed LMS as the main focus of the research. Moreover, research related to LMS also uses other models as theoretical frameworks, such as UTAUT2[7] and TAM[8]. Each of the various theoretical frameworks has advantages and disadvantages in addition to different characteristics. TAM has six variables, including External Variables, that studies using TAM will be influenced by external factors. The UTAUT2 model has nine variables, including the Social Influence variable with two

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dimensions, social factors and subjective norms, which are related to other people around the user. Therefore, such studies consider social factors to affect the level of using a technology of the users. Characteristically, UTAUT2 is more optimally used to comprehend technology acceptance within the scope of organisation, which is in accordance with the nine variables in the model. Thus, TAM and the UTAUT2 model are not appropriate for research aiming to understand the internal factors such as the hedonic motivation in the learning process without being influenced by other external factors.

This current study focused on LMS as the main factor in increasing intrinsic motivation in the learning process by making students and lecturers as the respondents. In general, LMS is interpreted as the platform for digitally distributing and supervising learning materials[9]. LMS continues to experience various improvements in features and each type of LMS also has its own characteristics, but the basic features of standard LMS include user access management rights, teaching material management, user connectivity, exam/assignment management,and learning outcomes management. Therefore, these features become the criteria for each LMS used in the calculation of HMSAM factors.

On one hand, online learning causes lecturers to encourage students to be more active in using LMS, yet the lack of interaction in the process results in demotivation and lack of focus and attention from students[10]. On the other hand, to improve the learning atmosphere using LMS, lecturers' acceptance of an innovation is a critical issue[11]. Among the other issues, intrinsic motivation is another main aspect in the learning process[12]. Intrinsic motivation can be interpreted as actions taken without external influences, including the will to study using LMS independently[13]. To increase students' intrinsic motivation in the learning process, an LMS design innovation using related variables from the HMSAM model is needed.

Therefore, a study is needed to evaluate the use of LMS, specifically from the user's perspective. This study aimed to determine the relationship between the ease of using LMS and the users' behavioural intentions and focus on using LMS, and to test the HMSAM model. The result of the research can be used to develop more hedonic motivation-based LMS and validate the HMSAM modal to be adopted in future research.

This paper follows the system of an introduction, research method, results and discussion, and conclusions. The introduction contains the background, literature review, research recency, main issues of the research, research goals and contributions, and research systematics. The research method consists of research stages, population and sample, and research hypotheses. The results and discussion are the results of data collection and processing. The conclusion is the summary of the results and discussion of the collected data.

2. Research Methods

The present study used the BSR (Behavioral Science Research) approach with quantitative methods through collecting data using surveys. To disclose the results of the study, a statistical analysis was carried out using PLS-SEM[14][15][16].

2.1. Research stages

The first stage was to determine the research setting as the research topic, which was the use of the LMS (Learning Management System) in higher educational institutions. The second stage included a literature study by looking through various journal articles related to digital learning, LMS, and theoretical frameworks to use. In the third stage, the research design was carried out by establishing the HMSAM (Hedonic Motivation System Adoption Model) [6][17] as the theoretical framework and determining the research hypothesis. In the fourth stage, data was collected quantitatively using a questionnaire arranged on a Likert scale (1-5). In the fifth stage, data analysis was carried out using the PLS-SEM method with the

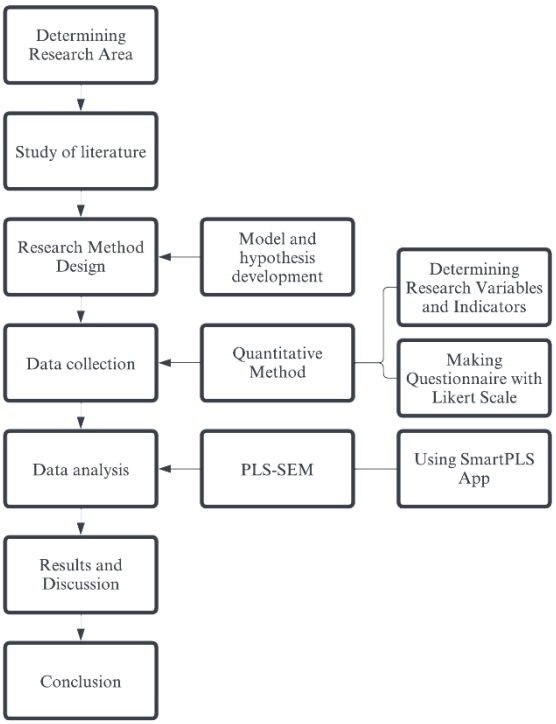

Figure 1. Research Stages

SmartPLS 3.2.9 application. At the following stage, the results and discussion are explained based on the analysis in the previous stage. In the final stage, the

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conclusion to answer the research objectives and a summary of the results and discussion were drawn and stated.

2.2. Sample and Population

The objects of the study were LMS users who were lecturers and students at FTI UKSW (Faculty of Information Technology Universitas Kristen Satya Wacana). Out of the 123 respondents who participated, validation was carried out according to the requirements such as active lecturers/students of FTI UKSW and LMS users and resulted in 118 valid respondents.

2.3. Research Hypothesis

To answer the research question, the research model was based on the HMSAM as the theoretical framework[6][17]. This research model had one independent variable and six dependent variables, as shown in Figure 2.

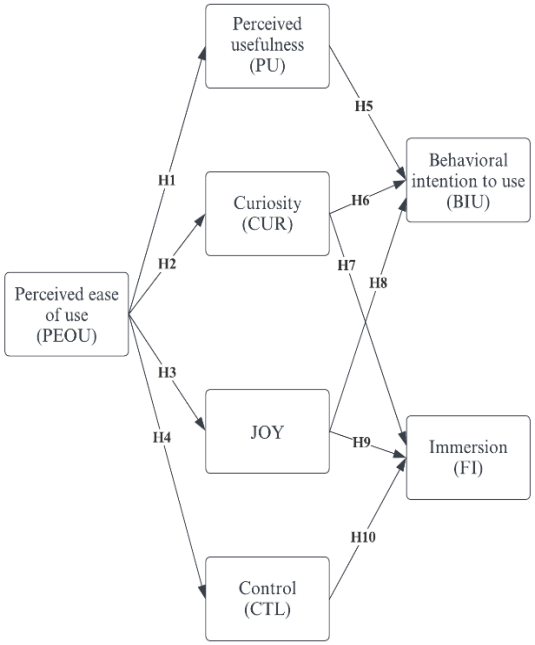

Figure 2. HMSAM model and research hypothesis

Drawn from the model, the hypothesis of the research was that the ease of using LMS influences the users' behavioural intention and focus. Therefore, the hypotheses of the study included:

H1: Perceived ease of use (PEOU) has a significant effect on perceived usefulness (PU) in using LMS.

H2: Perceived ease of use (PEOU) has a significant effect on curiosity (CUR) in using the LMS.

H3: Perceived ease of use (PEOU) has a significant effect on joy (JOY) in using the LMS.

H4: Perceived ease of use (PEOU) has a significant effect on control (CTL) in using the LMS.

H5: Perceived usefulness (PU) has a significant effect on the behavioural intention to use (BIU) LMS.

H6: Curiosity (CUR) has a significant effect on the behavioural intention to use (BIU) LMS.

H7: Curiosity (CUR) will have a significant effect on Focused immersion (FI) in using LMS.

H8: Joy (JOY) will have a significant effect on the behavioural intention to use (BIU) LMS.

H9: Joy (JOY) will have a significant effect on users' focus (FI) in using LMS.

H10: Control (CTL) will have a significant effect on users' focus (FI) in using the LMS.

3. Results and Discussions

3.1. Respondent Demographic Data Analysis

Data collection using an online questionnaire started from April 6, 2022 to June 3, 2022. The results of the questionnaire are as shown in table 1.

Table 1. Respondent demographic data

Category	Items	Frequency	Percentage
Respondent type	Lecturer	3	2.54%
	Student	115	97.45%
Gender	L	67	56.77%
	P	51	43.22%
Study program	System Information	41	34.74%
	Information Engineering	41	34.74%
	Visual Communication Design	21	17.79%
	Public Relations	10	8.47%
	D3 Information Engineering	2	1.69%
	Accounting Information System	1	0.84%
	Library & Information Science	1	0.84%
	Information & Computer Engineering Education	1	0.84%
LMS	Flearn	114	95.79%
	Google Classroom	101	84.87%
	Schoology	19	15.96%
	MOODLE	12	10.08%
	Edmodo	15	12.60%
Frequency of LMS usage/day	1-3 times	83	70.33%
	4 - 6 times	29	24.57%
	7 - 9 times	1	0.84%
	>= 10 times	5	4.23%

From the data collection process, 118 responses were obtained from 3 lecturers and 115 students, with 56.77% of male respondents and 43.22% of females. Based on the results of these responses, students were the majority, with an average comparison of 1 lecturer

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to 38 students. It could be understood that 1 class could have a maximum capacity of 40 students. Also, there were representatives of 8 study programs at FTI UKSW. The System Information and Information Engineering programs had the most respondents (34.74%), followed by the Visual Communication Design program (17.79%), Public Relations (8.47%) and D3 Information Engineering (1.69%). In the last place were Accounting Information Systems, Library & Information Science, Information & Computer Engineering Education respectively with 0.84%. The number of respondents from each study program was also influenced by the total student population in the study program.

FTI UKSW lecturers and students had used 5 different LMS designs, as shown in table 1. UKSW has implemented Flearn as an LMS used in the learning process at the university as a whole. Flearn is an LMS designed based on Moodle LMS. Flearn had several limitations, including non-established learning materials and frequent server technical problems, that lecturers and students often used other alternatives LMS. Table 1 shows that Google Classroom was the second most used LMS, followed by Schoology, MOODLE, and Edmodo with under 16% of users each. MOODLE was the similar type of LMS to Flearn that was used by the university. Although, in practice Flearn was the most used LMS in the university despite its limitations, since it had been synchronised with every course at UKSW that Flearn became the main LSM. The others were alternatives used independently by lecturers of UKSW.

The frequency of using LMS in one day was divided into 4 categories: 1-3 times at 70.33%; 4-6 times at 24.5; 7-9 times at 0.84%; and >= 10 times at 4.23%. It could be concluded that the level of using LMS in the learning process was still lacking, as the majority of the users only used it 1-3 times a day. So it can be assumed that lecturers and students used LMS only when the learning process was in virtual classes. Online learning with flexible study time should be able to increase student study time[18]. Yet, data from the present study discovered that less than 30% of LMS users had intrinsic motivation to use LMS, while the remaining only used LMS as the mandatory virtual learning routine.

3.2. Measurement Model (Outer Model)

In general, measurement theory is used to comprehend latent variables or research items being measured[19]. In practice, testing the measurement model or outer model aims to determine the validity and reliability of the items in the research model. In this study a reflective approach was used in the measurement model, which was illustrated by the direction of the arrow from the construct/variable to the indicator[20]. The results of this measurement model were collected from the Loading Factor values of all items and the values of Cronbach's Alpha, Composite Reliability, Average Variance Extracted (AVE), and Discriminant Validity of each construct. The process of testing the measurement model was carried out in two stages. The first stage was to look at the validity and reliability of the constructs/research items. The second stage was to remove the invalid constructs/items and display the results of the measurement model.

3.2.1. Validity test

The construct validity test of the Outer Model consists of convergent validity and discriminant validity[20]. Convergent validity has the principle that the items of a construct/variable should be highly correlated, thus the assessment indicators are determined based on the results of the loading factor and AVE with the standard value of more than 0.7 and 0.5, respectively. Meanwhile, discriminant validity has the principle that items between constructs should not be highly correlated.

The results of the convergent validity test are shown in table 2. One item in the PEOU constructs had a loading factor value below 0.7, thus the item PEOU 6 with a value of 0.659 was considered invalid. Meanwhile, the lowest factor loading value of PU construct items was at 0.776 that all of the items were valid. The lowest factor loading value of CUR construct items was at 0.851 that all of the items were valid. Furthermore, the JOY construct items had the lowest loading factor value at 0.803 that all of these items were valid. Furthermore, the CTL construct items had the lowest factor loading value at 0.848 that all of these items were valid. Furthermore, the lowest factor loading value of FI and BIU construct items were 0.728 and 0.795, respectively, that all items of the constructs were considered valid. The results of the convergent validity test based on AVE showed the values of all constructs at above 0.5 thus all were considered valid.

Table 2. Validity and Reliability Test Results (first stage test)

Indicator	Loading Factor	Cronbach's Alpha	Composite Reliability	AVE
PEOU 1	0.868	0914	0.93	0.627
PEOU 2	0.786			
PEOU 3	0.852			
PEOU 4	0.747			
PEOU 5	0.749			
PEOU 6	**0.659**			
PEOU 7	0.878			
PEOU 8	0.772			
PU 1	0.822	0.818	0879	0.644
PU 2	0.807			
PU 3	0.776			
PU 4	0.804			
CUR 1	0.916	0.883	0.928	0.812
CUR 2	0.933			
CUR 3	0.851			
JOYS 1	0.905	0921	0941	0.762

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JOYS 2	0.88			
JOYS 3	0.803			
JOYS 4	0.924			
JOYS 5	0.847			
CTL 1	0.86			
CTL 2	0.9	0891	0.924	0.753
CTL 3	0.862			
CTL 4	0.848			
FI 1	0.728			
FI 2	0.916	0.875	0.915	0.731
FI 3	0892			
FI 4	0.872			
BIO 1	0.795			
BIU 2	0.906	0879	0917	0.734
BIO 3	0.876			
BIO 4	0.845			

Table 3. Fornell – Larcker criteria (first stage test)

	BIU	CTL	CUR	FI	JOY	PEOU	PU
BIU	**0.86**						
CTL	0.6	**0.87**					
CUR	0.63	0.55	**0.9**				
FI	0.59	0.59	0.65	**0.86**			
JOY	0.66	0.67	0.73	0.67	**0.87**		
PEOU	0.6	0.53	0.5	0.53	0.64	**0.79**	
PU	0.69	0.61	0.63	0.52	0.69	0.72	**0.8**

The results of the discriminant validity test are shown in table 3. Discriminant validity with the Fornell-Larcker criterion is the result of the square root of the AVE value, with the principle that the test is declared valid if the value of each construct must be greater, compared to the correlation value in other constructs[21]. Therefore, results showed the coherence value of the discriminant validity test of each construct.

Based on the results of the convergent validity test and discriminant validity test in tables 2 and 3, all assessment indicators were declared fulfilled except for the factor loading value in PEOU 6 item, which was 0.659. Thus, it was necessary to remove item PEOU 6 to achieve the validity of all constructs in the measurement model (Outer Model).

3.2.2. Reliability Test

In the Outer Model, a reliability test also needs to be tested. Reliability test aims to see the consistency and accuracy of research items in measuring constructs[20]. To measure the level of reliability, assessment indicators were based on Cronbach's Alpha and Composite Reliability. The standard for assessing the construct was reliable, considering the value of Cronbach's Alpha and Composite Reliability must be above 0.7. The reliability test in the present study was carried out using the two assessment indicators.

The results of the reliability test are shown in table 2. The table shows that the lowest value of Cronbach's Alpha was PU construct with 0.818. The construct also had the lowest value of Composite Reliability with 0.879. JOY construct had the highest value of both Cronbach's Alpha and Composite Reliability. Nevertheless, the results of the reliability test showed that all constructs were reliable because all values of the two assessment indicators were above 0.7.

3.2.3. Verification of model validity results

The second stage followed through the results of the first stage tests. At this stage, item PEOU 6 was removed from the model and then tested again to ensure the validity of all constructs. The results of the second stage are shown in Figure 3. The figure shows that all 31 items of the 7 constructs had loading factor values above the minimum limit of 0.7, thus all items in the second stage of the test were declared valid.

Tests after removing item PEOU 6 also resulted in an increase of validity value of other items. Particular increase was shown for all the remaining PEOU construct items: PEOU 2 (0.788), PEOU 3 (0.853), PEOU 4 (0.756), PEOU 5 (0.757), and PEOU 8 (0.787). Some other constructs also show an increase and decrease in the value of the loading factor yet not significantly and was still at the normal level. Afterward, a Structural Model (Inner Model) was carried out using the research model in Figure 3.

3.3. Structural Model (Inner Model)The structural model (Inner Model) is a continuation of the model evaluation. In the structural model (Inner Model), there are two components which generally become indicators of assessment, namely the R-Square value and Significance. The present study also considered the value of the total indirect effects as the additional indicator.

3.3.1. R-Square test results

The R-Square value was used to measure changes in the independent variable to the dependent variable. To determine this, the R-Square value was divided into three categories, namely 0.75 (strong), 0.50 (moderate), and 0.25 (weak)[20]. The results of the R-Square values are shown in table 4.

Table 4. R-Square Results

Dependent Variable	R-Square	Category
Behavioural Intention To Use	0.56	Moderate
Control	0.278	Weak
Curiosity	0.243	Weak
Immersion	0.53	Moderate
Joy	0.405	Weak
Perceived Usefulness	0.528	Moderate

Behavioural Intention To Use (BIU) variable had an R -Square value of 0.56 in the moderate category. It meant that the change variations in the BIU variable could be explained by a 56% of independent variable. The Control variable (CTL) had an R-Square value of 0.278 in the weak category. It meant that the change variations

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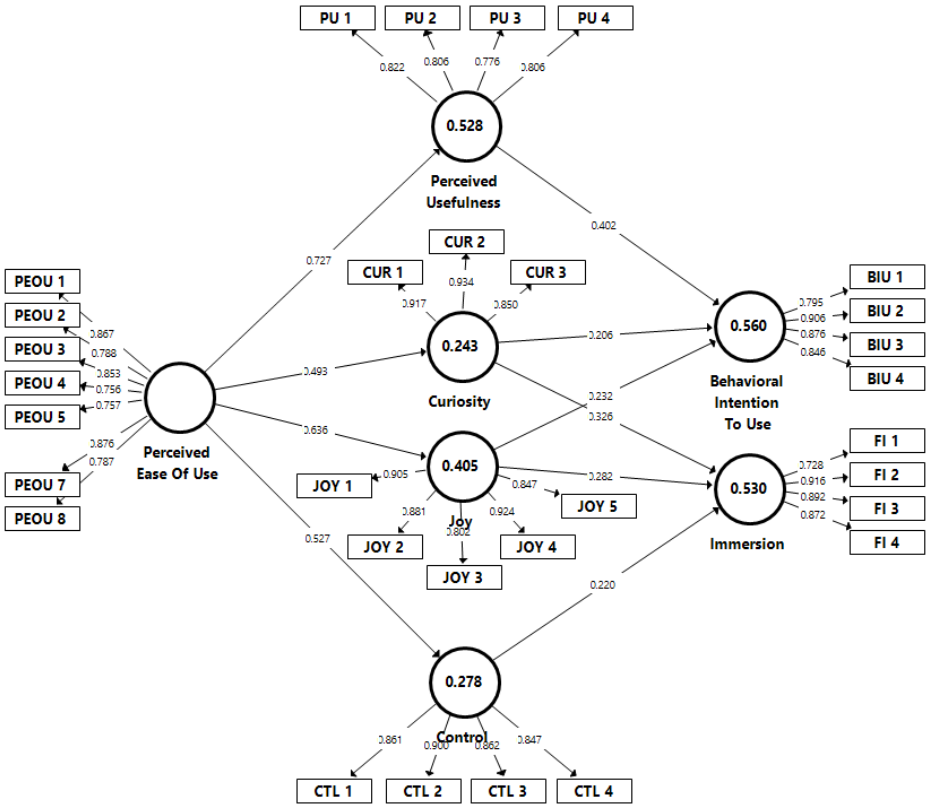

Figure 3. Valid Research Model (second stage test)

in the CTL variable could be explained by a 27.8% of independent variable. The Curiosity variable (CUR) had an R-Square value of 0.243 in the weak category. It meant that the change variations in the CUR variable could be explained by a 24.3% of independent variable. The Immersion variable (FI) had an R-Square value of 0.53 in the moderate category. It meant that the change variations in the FI variable could be explained by a 53% of independent variable. The Joy variable had an R-Square value of 0.405 in the weak category. It meant that the change variations in the Joy variable could be explained by a 40.5% of independent variable. From the results of the R-Square values of all dependent variables, it was derived that the target variables (BIU, FI) tended to have Moderate R-Square values compared to other dependent variables which had Weak R-Square values.

3.3.2. Hypothesis Test Results

In this stage, hypotheses were tested based on the significance level of the path coefficient value. T-value of 1.96 with a significance level of 5% was used and the two-tiled test type was equipped[20]. The results of hypotheses tests are shown in table 5.

According to the path coefficient test value, the following hypotheses test results were obtained: H1: perceived ease of use (PEOU) would have a significant effect on perceived usefulness (PU) in using LMS. The result showed that H1 had a t-statistical value of 13,145 and was greater than the t-value.

Table 5. Path coefficient test results

Hypothesis	STDEV	T-Statistics	P-Values
H1: PEOU -> PU	0.055	13.145	0
H2: PEOU -> CUR	0.08	6.144	0
H3: PEOU -> JOY	0.064	9,924	0
H4: PEOU -> CTL	0.088	5,972	0
H5: PU -> BIU	0.118	3,395	0.001
H6: CUR -> BIU	0.102	2025	0.043
H7: CUR -> FI	0.101	3,235	0.001
H8: JOY -> BIU	0.123	1887	0.059
H9: JOY -> FI	0.103	2,743	0.006
H10: CTL -> FI	0.086	2,539	0.011

H1 was accepted, thus it was concluded that the ease factor in using LMS in the learning process had a significant influence on the perceived usefulness of LMS users; H2: perceived ease of use (PEOU) would have a significant effect on curiosity (CUR) in using the LMS. The result showed that H2 had a t-statistical value of 6,144 and was greater than the t-value. H2 was accepted, thus it was concluded that the ease factor in using LMS in the learning process had a significant influence on the curiosity of LMS users; H3: perceived ease of use (PEOU) would have a significant effect on joy (JOY) in using the LMS. The result showed that H3 had a t-statistical value of 9,924 and was greater than the t-value. H3 was accepted, thus it was concluded that the ease factor in using

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LMS in the learning process had a significant influence on the excitement factor felt when using LMS; H4: perceived ease of use (PEOU) would have a significant effect on control (CTL) in using the LMS. The result showed that H4 had a t-statistical value of 5,972 and was greater than the t-value. H4 was accepted, thus it was concluded that the ease factor in using the LMS in the learning process had a significant influence on the user's control over the LMS.

The H1 to H4 tests were significantly influenced by the PEOU variable. H5: perceived usefulness (PU) would have a significant effect on the behavioural intention to use (BIU) LMS. The result showed that H5 had a t-statistical value of 3,395 and was greater than the t-value. H5 was accepted, thus it was concluded that the perceived usefulness factor could significantly influence the behavioural intention to use the LMS. H6: Curiosity (CUR) had a significant effect on the behavioural intention to use (BIU) LMS. The result showed that H6 had a t-statistical value of 0.102 and was greater than the t-value. H6 was accepted, thus it was concluded that the curiosity factor can significantly influence the behavioural intention to use the LMS. H7: Curiosity (CUR) would have a significant influence on Focused Immersion (FI) in using LMS.

The result showed that H7 had a t-statistical value of 3,235 and was greater than the t-value. H7 was accepted, thus it could be concluded that the curiosity factor could significantly influence the user's focus in using the LMS. H8: Joy (JOY) would have a significant effect on the behavioural intention to use (BIU) LMS. The result showed that H8 had a t-statistical value of 1.887 and was smaller than the t-value of 1.96. H8 was rejected, thus it could be concluded that the user's excitement did not have a significant influence on the behavioural intention to use the LMS. H9: Joy (JOY) would have a significant influence on user focus (FI) in using LMS. The result showed that H9 had a t-statistical value of 2,743 and was greater than the t-value. H9 was accepted, thus it could be concluded that the excitement felt by the user could significantly influence the user's focus when using the LMS. H10: Control (CTL) would have a significant influence on user focus (FI) in using the LMS. The result showed that H10 had a t-statistical value of 2,539 and was greater than the t-value. H10 was accepted, thus it could be concluded that the user's control over the LMS could significantly influence the user's focus in using the LMS.

3.3.3. Indirect Effect test results

Table 6 shows the results of the indirect influence test between the Perceived ease of use (PEOU) variable and Behavioural intention to use (BIU), and Immersion (FI).

Based on the results of the tests conducted, the indirect relationship between the PEOU and BIU variables had a t-statistical value of 8.105, and this value was above the t-value. Therefore, it could be concluded that the ease factor in using the LMS in the learning process had a significant effect on the behavioural intention to use the LMS. Furthermore, the indirect relationship between the PEOU and FI variables also had a t-statistic value that was greater than the t-value, 6.794 and 1.96, respectively. Therefore, it could be concluded that the convenience factor in using LMS in the learning process also had a significant effect on user focus in using LMS.

Table 6. Total indirect effects

	STDEV	T Statistics	P Values
PEOU -> BIU	0.067	8.105	0
PEOU -> FI	0.067	6,794	0

3.3.4. Discussion

The present study tested ten hypotheses of seven variables and the results were as the following. H1 hypothesis stated that when the LMS was easy to use, it would certainly increase the user's trust factor in the system leading to positive perceptions that the LMS was useful or beneficial to users' learning process. The H2 hypothesis stated that the ease of using the LMS could increase the curiosity of the user. The curiosity factor raised the user's interest when using the LMS, and could reduce the user's cognitive load during the interaction with the system. The H3 hypothesis proved that when the LMS was easy to use, it could increase the happiness factor and encourages user's enthusiasm and attention when using the LMS. The H4 hypothesis explained that control factors were related to the ease of use of the LMS, thus it could be concluded that users felt able to manage or control the system when the system was easy to use.

The H5 hypothesis stated that when users believed in the benefits arising from using LMS in the learning process, it certainly affected the users' intention to continue using LMS in the future. Hypothesis H6 proved that curiosity could affect user intentions, because it built motivation for users to explore. To satisfy the curiosity, users will continue to use the LMS to explore various interesting things. Hypothesis H7 explained that curiosity also affected user's focus, presumably because when users were full of intention to explore, the users were also directly involved in using the LMS. The H8 hypothesis was rejected, thus proving that happiness had no effect on the intention to use LMS in the future. It was certainly influenced by the external factors, namely the use of LMS was an obligation in the learning process that increasing happiness did not affect the user's behavioural intention to use the system. In contrast to the previous hypothesis result, the H9 hypothesis succeeded in proving that happiness could affect users' focus,

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because being happy was able to reduce the user's cognitive load in completing various tasks that users indirectly was totally immersed while using the LMS. The H10 hypothesis stated that user's control of the LMS could affect user's focus, which was influenced by the trust factor, that when users believed and had full control over the system, they would be fully immersed in using the LMS.

The result of the study proved that LMS users lack the intrinsic motivation to use LMS as a learning platform. Therefore, it is necessary to develop an LMS according to the needs and characteristics of the users, that it can increase the intrinsic motivation. Based upon these results, the seven HMSAM variables form the basis for future LMS development. The present study also succeeded in testing the relationship between these variables, and only H8 out of 10 hypotheses was rejected. Moreover, the results of the study also succeeded in answering the research objective where the ease of using the LMS has a significant causal relationship with the user's behavioural intention and focus in using the LMS. The indirect relationship between the ease of using the LMS with the behavioural intention and user focus in using the LMS is definitely influenced by the usability factor, the curiosity factor, the excitement factor, and the control factor, thus to create an LMS that is able to increase the user's behavioural intention and focus, they need to be considered. External factors, such as influence of educational institutions policies to use LMS and trust factor should also be considered. The trust factor has a significant importance in influencing the other factors, that users' trust in the LMS is a core part of developing a system in the future.

This study has several contributions to offer the future development of LMS. First, the LMS must be developed based on the usability factor. Lecturers and students using the LMS should find it helpful, considering learning material management features, connectivity features between lecturers and students, and material backup features on a regular basis. Second, the LMS must be developed based on the curiosity factor of the users. Lecturers and students using the LMS could continue to seek new encounter both in knowledge and learning experience. An interactive quiz feature could also be equipped that users, especially students, are required to be more active in learning and discovering new things. Third, LMS must be developed based on the excitement factor. Lecturers and students using the LMS should feel that learning process is fun. It can be obtained by adding similar feature to *Jambor*, as in a digital whiteboard feature, hence more interesting and interactive learning. Fourth, LMS must be developed based on control factors. Lecturers and students using LMS should find it easier to manage and control the learning process. To achieve it, flexibility features on the lecturer's role can be developed that allowing extension time for submitting assignments, or filtering material for certain students or classes. Meanwhile, on the student's role, the features to filter messages in connectivity during class,and change the LMS themes according to their preference should be considered as well.

4. Conclusion

According to the results of the present study, it was discovered that there was a significant relationship between the ease of using the LMS and the user's behavioural intention and focus in using the LMS. After testing the ten hypotheses, it was concluded that the LMS ease of use significantly influences usability, curiosity, excitement and control of the users as well. However, one hypothesis was rejected, concluding that there was no significant relationship between excitement and behavioural intention to use LMS. The results also concluded that LMS users still lacked the intrinsic motivation in the learning process, that to improve it, higher educational institutions must prioritize the user's trust factor in LMS. Trust in the system can affect the intention and focus of the user. Through this research it was also revealed that the trust factor has a correlation with other factors, such as the usability factor, the curiosity factor, the excitement factor and the control factor. Therefore, these four factors should become the basis for the development of future LMS for higher educational institutions.

However, the present study is still limited in some aspects that can be refined in further research. Firstly, future research should expand the overall university environment population. Furthermore, the number of samples from respondents must be increased for better generalisation. Finally, future research must be able to continue the proposed LMS development into a more complex system design.

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