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E-LEARNING DESIGN, MANAGEMENT SUPPORT AND STUDENT ENGAGEMENT IN ONLINE LEARNING

Dewi Tamara[1*], Tathit Surya Arjanggi[2], Lukman Akhmadi[3]
*[*123]Business Management Program, Management Department, BINUS Business School Master Program, Bina Nusantara University, Jakarta, Indonesia 11480*

Corresponding Author:-

Abstract:-

The online course system offers the opportunity for learners to improve their competence without the obstacles of distance and time. However, we must ensure that online learning remains of quality and provides optimal results. One of the things that influence the quality of education is student engagement, to determine the effect of management support variables and online learning design variables on learner engagement within the scope of the company are the objectives of this research. The statistical test methods performed were statistical tests of validity, reliability, discriminant validity and testing the effect of factors using Smart PLS 3.2.9 software. Evaluation data obtained through a questionnaire distributed to respondents of PT. Pupuk Kaltim who has participated in e-learning learning. We accept both hypotheses. The elearning design has a significant positive effect on Student Engagement and Management Support has a significantly positive effect on Student Engagement.

Keyword:- *Design e-learning, Management Support, Student Engagement*

INTRODUCTION

PT Pupuk Kalimantan Timur (PKT) is one of the fertiliser factories in Indonesia that produces the main products of Ammonia, Urea and NPK. PKT has 5 Ammonia & Urea factories and 2 NPK factories with Ammonia production volume of 2,740,000 tons per year, 3,435,000 tons per year of Urea and 350,000 tons per year of NPK.

Adequate and competent human resources needed to operate the seven factories efficiently and safely. One of the company's strategies in facing the VUCA era is to optimise the number of workers, accelerate the mastery of technology and accelerate the improvement of equitable competence. The number of workers in PKT since 2016 has decreased by 2144 employees in 2016, 1999 employees in 2017, 1841 employees in 2018 [1)]. The decrease in the number occurred because many employees entered the average retirement age.

The reduction in the number of employees and accompanied by an increasing target will result in less time for employees to develop their competencies through training. According to the Internet, for education, students use to read articles 55.30%, see tutorial videos 49.67%, share articles / educational videos 21.73%, online courses 17.85% and list of schools 14.63 % (APJII, 2017). Moreover, Caragliu (2011) mentioned that technology currently offers more opportunities to learn without the time and distance barriers. The company saw this as a strategy to improve the competence of employees. The management directs to increase the diversity of learning methods by using online learning or e-learning methods. Since 2019 the PKT has had an e-learning system based on Open edX and currently has ten e-learning modules.

Iqbal & Ahmed (2010) describe the term of E-learning is one of the methods for collaborating and connecting data and information through computers. The e-learning system is a learning method that is overgrowing at this time. Various advantages of e-learning such as comfort, deeper learning, more variety and freedom of expression (Qureshi, Ilyas, Yasmin & Whitty, 2012). E-learning enlarges employees' opportunities to increase their competence anytime and anywhere quickly. Although the learning process is facilitated by e-learning technology, it must be ensured that the method produces excellent learning performance.

The important thing to increase student engagement in organisations is policy and commitment to the implementation of the policy (Pike & Kuh, 2005). Policies in the organisation are the authority of management so that strong management support will affect the level of student engagement. Support from upper management is one of the variables discussed in research related to all aspects of the organisation. According to Kandelousi (2011), management support can be observed from several things, namely helping employees who are having difficulties in their work, showing commitment to work and encouraging employees to be better.

The existing research only discusses the effect on student engagement in academic schools; no study examines the effect on student engagement in employees where the employee is positioned as a learner. This research will focus on the factors that influence student engagement at PT. Pupuk Kaltim is mainly from the design of e-learning systems and from management support. In implementing e-learning systems at PT. Pupuk Kaltim needs to be considered factors that can increase employee engagement in learning so as to produce good student performance and increase competence can be done quickly. This research will measure how the influence of management support and e-learning system design on the level of employee engagement in participating in e-learning learning in the Indonesian fertiliser industry, especially at PT Pupuk Kalimantan Timur. The results of this study can later be a concern for companies so that the implementation of online learning systems can run effectively.

Student Engagement

Student engagement was first introduced as part of the Social Control Theory by Hirshi in 1969 (in Archambault, 2009) which is a feeling of belonging and a deep attachment to an institution and has the characteristics of commitment, belief, devotion and involvement. These characteristics significantly affect current student engagement theory. Fredricks et al. (2004) explain that student engagement is a multidimensional concept containing emotional, cognitive, and behavioural aspects. Trowler (2010) mentions the cognitive dimension can be shown by indicators that learners will try to achieve results above the standard values and enjoy the challenges experienced in the learning process. At the same time, the Emotional dimension can be the reactions of learners such as interest, pleasure and a sense of belonging. Behaviorally bound learners will obey the rules or norms that apply as always present in each training module, high involvement and not show negative behaviour.

Trowler (2010) identify three poles based on Cognitive, Emotional and Behavioral attributes on learning methods. The details are in Table 1.

Table 1. Cognitive, Emotional and Behavioural-based on Trowler (2010).

	Positive	Neutral	Negative
Cognitive	Doing tasks according to standards or even exceed standards	Collecting tasks late, in a hurry to do or also never do the task	Questioning given tasks even change the job
Emotional	Showing interest	Feeling bored in taking lessons	Feel of rejection
Behavioural	Take lessons and participate with high enthusiasm	Absent from the lesson without reason	Boycott lessons or even disrupt ongoing classes

A person can show a positive engagement on one dimension and at the same time, show negative engagement on another dimension. According to Anderson (2003), student engagement can be developed through interaction. Based on Trowler

(2010), student engagement is achieved when the student has a positive attitude with highly cognitive, emotionally interested in the subject and behaviorally enthusiastic with the methods.

E-Learning Design

Moore (1993) identified three types of interactions in e-learning that are effective, namely: Learner-to-learner, Learner-to-instructor, and Learner-to-content. Learner-to-learner is the interactions between fellow learners. Learner-to-instructor is interactions between learners and instructors. Learner-to-content is the learner's interaction with learning media such as e-books, videos, and other multimedia.

According to Beatrice (2011), learning programs have the aim of improving three things: cognitive skills, interpersonal skills, psychomotor skills. Most online learning intended to enhance cognitive abilities, but it does not rule out the possibility of increasing interpersonal skills by designing learning methods through interactive role-playing.

According to Lister (2014), four essential things in designing e-learning systems, namely: Course Structure, Content Presentation, Collaboration & Interaction, and Timely Feedback. The Course Structure presents course information, syllabus, timetable, outline and other information. The Content Presentation is the design of learning modules along with the assignments or quizzes of each module. The Discussion forums, chat and email facilitate collaboration & interaction on e-learning systems. Instructor wil monitor the participants using Timely Feedback.

Management Support

Management support influences work attitudes and work behaviour of employees (Weiss 2002). Management support has a positive relationship with organisational performance (Barlett, 2004). According to Ismail (2019), management support brings a sense of involvement and contributes more to employees that can motivate them to come up with creative thoughts, do their jobs more efficiently. Kandelousi (2011) states that management support can be observed from several things, namely helping employees who are having difficulties in their work, showing commitment to work, and encouraging employees to be better. With some of the above literature research conducted in the fertiliser industry has the following research models and hypotheses:

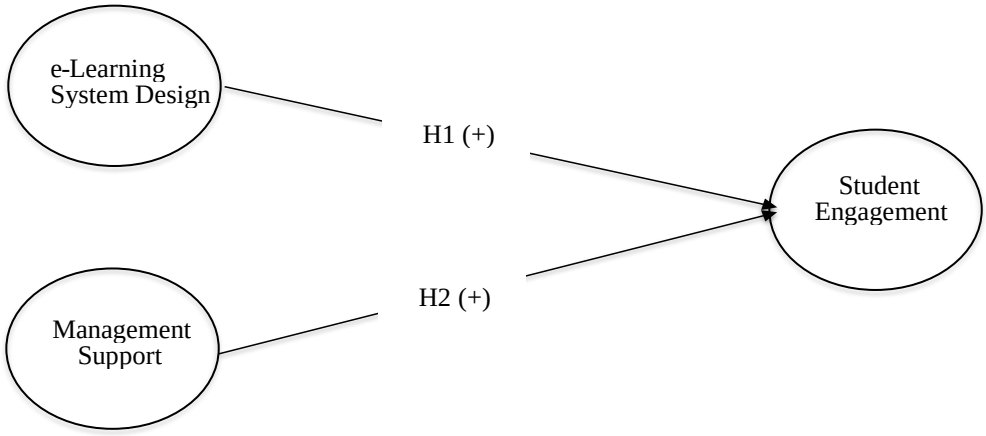

Figure 1. Research Model

H1: E-learning system design has a positive influence on student engagement in PT. Pupuk Kaltim.
H2: Management support has a positive influence on student engagement at PT. PT. Pupuk Kaltim.

METHODOLOGY

The research is at PT Pupuk Kalimantan Timur (PKT), a fertiliser company that produces fertilisers and located in the city of Bontang, East Kalimantan. PKT since 2019 has implemented an e-learning system as one of the learning methods for its employees and currently has ten e-learning modules.

This research is a survey method and data collection, which is conducted only once (one-shot study) with non-contrive and individual study settings as the unit of analysis. The target population is employees who have participated in online learning in 2019 of 190 employees, but in this study, we have a target number of samples of at least 80 people. The survey also looked at the respondent's gender and respondent's age range. The questionnaire survey consisted of 12 questions consisting of 3 questions about student engagement (learners' assessment of cognitive engagement, emotional engagement, and behaviour engagement), four questions about management support (policy, commitment, and helping, encouraging employees), and four questions about system design e-learning (course structure, content presentation, collaboration & interaction, feedback).

The survey that we propose uses online method, a questionnaire link in the form of google forms sent via email of employees who have become learners and has determined the limits for filling out the questionnaire to match the timeframe we need. A Likert scale is measuring the about a person's attitudes, opinions and perceptions. The level will be one for strongly disagree to 5 for strongly agree. We also use favourable items and unfavourable items so that the respondent always looks at each question.

Analysing the research hypothesis, we use the SmartPLS software version 3.2.9 to analyse the relationship between variables. Agreeing to Jogiyanto and Abdillah (2009), Partial Least Square (PLS) is an alternative Structural

Equation Model (SEM) may test the dimension of representations and structural model testing at the same time. Validity and reliability being tested by the measurement model, whereas causality (predictive models from hypothesis) tested with structural model. Partial Least Squares (PLS) analysis used to explain regression once specific problems follow in data collection and also make evaluations for both various dependent variables and multiple independent variables.

In this research, there are 3 (three) latent variables: e-Learning Design, Management Support and Student Engagement. There are 26 indicators in the latent variable, namely: 9 indicators in e-learning design, seven indicators in Management Support and ten indicators in Student Engagement following the design of the measuring instrument that we will ask questions in the questionnaire to respondents later.

Table 2. Variables Measurement

VARIABLE	ASPECT	ITEM	
Student Engagement	Cognitive	ry to do my best e-learning module assignments to get the best score.	**Favourable Item**
		he assignments given in the e-learning module are only formalities.	**Unfavoura ble Item**
		he assignments given in the e-learning module are not required to be done.	**Unfavoura ble Item**
		am challenged to get the highest score in every e-learning module that I follow.	**Favourable Item**
	Emotional	ttending training through e-learning modules is essential for my career.	**Favourable Item**
		b. I like learning through e-learning because it is following the times, practical and I can access at any time.	**Favourable Item**
		c. Learning through formal training (face to face) is more interesting than following the e-learning module.	**Unfavoura ble Item**
	ura l	a. I learned each session in the e-learning module according to the schedule specified.	**Favourable Item**
		b. I rarely get involved in discussion forums on elearning modules that I follow	**Unfavoura ble Item**
		c. For me, the discussion forum in the e-learning module is not essential to follow.	**Unfavoura ble Item**
VARIABLE	**ASPECT**	**ITEM**	
E-learning Design	Course Structure	a. E-learning module in learning.pupukkaltim.com is structured and easy to understand.	**Favourable Item**
		b. Duration for each module is not proportional to the amount of material provided.	**Unfavoura ble Item**
		c. e-learning module that I followed presents a clear and detailed outline and syllabus	**Favourable Item**
	Content atio n	a. The visualisation in the e-learning module that I followed is exciting.	**Favourable Item**
		b. The assignments/quizzes provided in each module are exciting and challenging to follow.	**Favourable Item**
	borati on & atio n	a. Chat facilities and discussion forums in the elearning module that I follow are useful for establishing communication with resource persons.	**Favourable Item**
		b. The lecture rarely responds to my email.	**Unfavoura ble Item**
	Timely Feedback	a. I get feedback from my learning results.	**Favourable Item**
		b. The lecturer monitors the activeness of elearning module participants.	**Favourable Item**
VARIABLE	**ASPECT**	**ITEM**	
Management Support	Support	a. E-learning is one of management's efforts to provide learning resources that support the best performance.	**Favourable Item**
		b. The e-learning platform is currently only built to meet the Company's KPI targets.	**Unfavoura ble Item**
	Commitme nt	a. Management is committed to providing a variety of platforms that meet the learning needs of employees	**Favourable Item**
		b. Although it requires vast resources and costs, management has allocated several budgets to support the development of e-learning.	**Favourable Item**
		c. Management sees that e-learning as a strategic program of the company.	**Favourable Item**
	Encourage ment	a. The implementation of e-learning in companies encourages employees to perform better.	**Favourable Item**
		b. I got the recognition of the certificate that I got after graduating from the e-learning module that I attended.	**Favourable Item**

FINDINGS

The questionnaire collected is 133 respondents. The demographics of respondents who filled out the survey explained in Table 1, where male respondents dominate (78.9%). For the age of respondents, most of them are 21-30 years (46, 6%).

Table 3. Profiles of Respondents

Characteristic	Items	Number	Per cent
Gender	Male Female	105 28	78.9 21.1
Age	Below 20	4	3.0
	21 - 30	62	46.6
	31 - 40	44	33.1
	41 - 50	12	9.0
	Above 50	11	8.3

The first dimension in the PLS model in the outer model is reflective measurement. Reliability and validity test used for measurement model calculation. Individually latent variable have to describe at minimum fifty per cent of outer loading. Then, the absolute correlation among indicators and latent variables give the score more than 0.5 or 0.7. The reflective indicator is then removed from the measurement model if it has an outer loadings value below 0.5. For reliability test, we use Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variant Extracted (AVE) which show the reliability of entirely indicators in model. The value of CA is 0.7 at the minimum. CR value should be the same with the CA value. The minimum of AVE is 0.5. This value indicates convergent validity, so latent variable describes the alternates of indicators more than half the of on average. To make absolute discriminant validity, we used Fornell-Larcker Criteria that AVE must higher than R2 with all added latent variables for individual latent variable. The final results are in Table 4.

Table 4. Convergent Validity and Reliability

Variable	Item	Factor Loading	Cronbach's Alpha	AVE	CR
Design e-Learning	DEL1	0.623 0.579	0.856	0.566	0.886
	DEL2	0.657 0.691			
	DEL3	0.783			
	DEL4				
	DEL5				
	DEL6	0.677			
	DEL7	0.669			
	DEL8	0.770			
	DEL9	0.671			
Management Support	MS1	0.680 0.707	0.846	0.565	0.886
	MS3	0.747			
	MS4	0.825			
	MS5				
	MS6	0.775			
	MS7	0.767			
Student Engagement	SE2	0.672 0.635	0.812	0.533	0.859
	SE3	0.609 0.618			
	SE5	0.657			
	SE6				
	SE7				
	SE8	0.637			
	SE9	0.746			
	SE10	0.683			

Table 5. Discriminant Validity

Variables	Design e-Learning	Management Support	Student Engagement
Design e-Learning	0.683		
Management Support	0.716	0.752	
Student Engagement	0.762	0.764	0.658

Refer to Figure 2, H1, and H2 are supported because the hypothesis shows a positive beta value and p-value less than 0.05. R square shows 0.630; this indicates that e-learning design and management support variables can explain 63% of student engagement; the remaining 37% cannot. Furthermore, from the results, it can be shown that all results support the hypothesis. From the independent variables studied, e-learning design has the most significant effect with a beta value of 0.532. The management support variable has a beta value of 0.321.

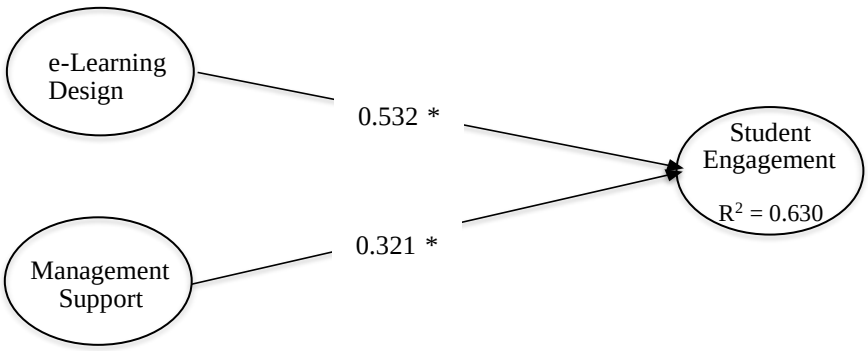

Figure 2. Structural Model

Table 6 illustrates the structural model. The hypothesis can be accepted if the beta value is positive and the p-value is smaller than 0.05 or Tstat > 1.96. From the test results, we can conclude that Hypotheses 1 and 2 are acceptable because the beta value is positive, the T-stat value is more than 1.96, or the p-value is less than 0.05. The following are the results of the calculation:

Table 6. Hypothesis Result

Hypothesis	Path	B	T Stat	P Values	Conclusion
H1	e-Learning Design → Student Engagement	0.532	6.316	0.000	Supported
H2	Management Support → Student Engagement	0.321	3.831	0.000	Supported

In the first hypothesis (H1), there is a relation between e-learning designs on learner engagement that gives a significant positive effect. It is because the e-learning design is exciting and easy to use the learner's attachment to e-learning learning outcomes. An attractive and comfortable design-in e-learning learning affects the employees of PT. Pupuk Kaltim, so the teaching and learning process using e-learning becomes more productive, faster, and easier to understand in the use of e-learning. It is consistent with what was conveyed by Nedeva (2013) that a successful e-learning learning method begins with a good design course development plan.

In the second hypothesis (H2), there is a significant positive effect between management supports on learner engagement. The management of PT Pupuk Kaltim provides an opportunity for its team members to develop competencies independently. The company also offers active coaching, and they appreciate the achievements of its employees. It makes employees feel that the help, encouragement and commitment provided by management has an impact significant positive towards the desire to increase competency through various learning methods actively.

CONCLUSION

From the two hypotheses proposed, H1 and H2 are accepted. Attachment of learners in learning e-learning is strongly influenced by e-learning design that is good, interesting and easy to use so that employees of PT. Pupuk Kaltim, which is busy with work every day, can improve its competence utilising learning that is fast, easy, interesting and not dull. Poor e-learning design will make the employees of PT. Pupuk Kaltim feels bored and prefers face to face learning compared to online learning. Management support is needed so that employees can follow the learning process through online learning methods properly. Learning outcomes through the e-learning method is recognised by management as proof of employee competence, thereby increasing employee motivation in participating in online learning. From the results of this research, it determined that the strategy of PT Pupuk Kaltim implementing e-learning to improve competence in the VUCA era is appropriate and for learning to be more productive, it must be considered online learning design. Management commitment is needed, especially in recognition of certificates of online learning and can integrate with other HR systems such as career development.

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