The Role of Human Resource Competency, Infrastructure and Supervision in the Implementation of Online Learning Systems at Private Higher Education (PTS) in Banten, Indonesia

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Abstract. This study's objectives are to gather empirical data on the impact of infrastructure, supervision, and human resource competency factors on the implementation of online learning systems and to offer recommendations for tactics to enhance those systems' use in private universities (PTS) in Banten, Indonesia. This kind of study uses a sequential explanatory design and mixed methodology. Purposive sampling was used to select 90 permanent academics from seven PTS in Banten Province as the research sample. Both conducting interviews and distributing questionnaires are utilized as data collection methods. Smart Partial Least Square 3.0 is the analysis tool that is being used. The study's findings demonstrate that the implementation of online learning systems is influenced by the competency elements of human resources, infrastructure, and supervision.

Keywords: HR Competency; Infrastructure; Supervision; Implementation of Online Learning Systems

1 Introduction

Online learning, according to [1], is a learning process that implements the internet network. Online learning is a process of converting traditional education into a digital format, therefore it has its own obstacles and opportunities, according to Harjanto and Sumunar in [2]. Online learning, according to Mulayasa in [3], is essentially learning that is done remotely. Online learning is the use of learning in a network to reach a wide number of people, according to [4]. If there has been a shift within a person, that individual is said to have undergone a learning process [5].

Competence is a characteristic possessed by a person in the form of abilities and skills that are used and applied to carry out a certain field. Competence also provides an overview of the knowledge and information that a person has that is directly related to what they are doing [6].

In contrast, competence, in the opinion of [7], is more closely related to the talent or capability that is used and results in workers, leaders, or officials who display great performance. As a result, competence can be defined as a mix of knowledge, skills, and behavior that enhances performance [8].

Online learning systems or e-learning can be run if the infrastructure is good and supports it. Infrastructure, based on a literature study from [9], consists of superstructure indicators, information infrastructure, network infrastructure, and application infrastructure.

According to [10], he contends that the most crucial managerial task is supervision. Even if the work activities are excellent, they cannot be deemed to be successful if they are carried out without oversight. The basis of supervision, in accordance with [11], includes standards that are put into practice, corrections and corrective measures that are required, assessment and measurement of implementation, and comparison with preexisting guidelines.

The hypotheses of the research concept have been compiled as follows:

H1: Human resource competency has a positive effect on the implementation of online learning systems at private higher education (PTS) in Banten, Indonesia.

H2: Infrastructure has a positive effect on the implementation of online learning systems at private higher education (PTS) in Banten, Indonesia.

H3: Supervision has a positive effect on the implementation of online learning systems at private higher education (PTS) in Banten, Indonesia.

2   Methods

The research method used is a mixed method, namely a method of collaboration between quantitative methods and qualitative methods. With the combination of these two methods, it can be obtained that it provides more complete research results from various points of view and sources [12]. The research design uses a Sequential Explanatory, namely a combination of quantitative and qualitative sequentially, with the first step conducting quantitative research methods that are testing hypotheses, then use qualitative methods to deepen, strengthen, weaken or abort quantitative data [13].

The population in this study were permanent lecturers at 7 (seven) private universities (PTS) in Banten, namely Bina Bangsa University, Serang Raya University, Primagraha University, Al-Khairiyah University, Mathlaul Anwar University, STIE Latansa Manshiro and Pamulang University. Meanwhile, the sampling technique used a saturated sample, where the population and sample are the same, namely 90 permanent lecturers in the 7 PTS. Determination of the sample used a non-probability sampling with purposive sampling.

3   Results and Discussion

Gender, age, marital status, last education, homebase, functional position and years of service are the characteristics of the respondents studied. Respondents who were classified as male were 45 people (50%) and 45 women (50%). The age of the most respondents was aged 31-40 years on average, with a total of 49 people (54.4%). Respondents with married status were 82 people (91.1%). Next, respondents with magister (S2) as the latest education had the highest percentage, namely 87 people (96.7%). Respondents with Bina Bangsa University as their homabase were 38 people (42.2%). Lastly, respondents who had functional position of Expert Assistant (AA) ranked first with 56 people (62.2%) and respondents with work experience > 6 years ranked first as well with 44 people (48.9%).
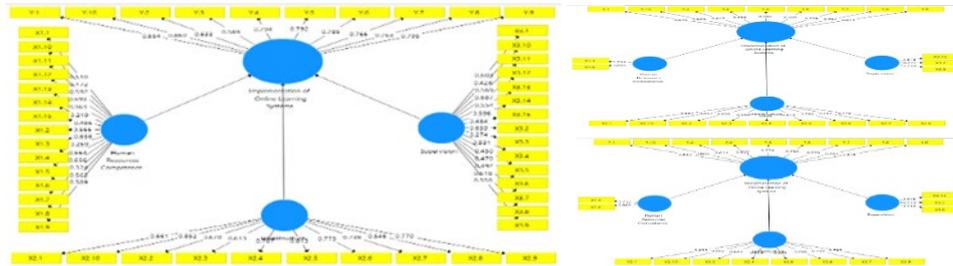
Figure 1. Initial Outer Loadings Model and Modification

The results of modification 2 of the outer loadings test indicated that all the values of the outer loadings indicators in this test have a value exceeding 0.70, so it can explain that the convergent validity measurement has fulfilled the requirements, and seen from the AVE value for this study, the resulting value of each variable is above 0.50 then it can be explained that in accordance with the requirements, it can proceed to the next stage of testing.

Table 1. AVE Test Results

Construct Reliability and Validity

Matrix	Cronbach's Alpha	rho_A	Composite Reliability	
				Average Variance Extracted (AVE)
Human Resources Competence				0.642
Implementation of Online Learning Systems				0.588
Infrastructure				0.590
Supervision				0.604

Table 2. Discriminant Validity Test Results

Discriminant Validity

Fornell-Larcker Criteri...	Cross Loadings	Heterotrait-Monotrait ...	Heterotrait-Monotrait ...	Copy to Clipboard:	Excel Format	R Fo
	Human Resources Competence	Implementation of Online Learning Systems	Infrastructure	Supervision		
Human Resources Competence	0.801					
Implementation of Online Learning Systems	0.432	0.767				
Infrastructure	0.453	0.995	0.768			
Supervision	0.410	0.500	0.507	0.777		

From Table 2, it shows that the value of the correlation, or AVE root relationship of the HR competency variable (X1) is 0.801. It's above the correlation relationship between other variables. Infrastructure (X2) is 0.768, supervision (X3) is 0.777, and implementation of online learning systems (Y) is 0.767.

The requirements that must be followed for this stage are that the composite reliability value of each variable must be above 0.70, as well as the value of Cronbach's alpha must be 0.70.

Table 3. Composite Reliability Test Results

Construct Reliability and Validity

Matrix	Cronbach's Alpha	rho_A	Composite Reliability
			Composite Reliability
Human Resources Competence			0.781
Implementation of Online Learning Systems			0.927
Infrastructure			0.919
Supervision			0.820

Table 4. R-square test results

R Square

Matrix	R Square	R Square Adjusted	
		R Square	R Square Adjusted
Implementation of Online Learning Systems		0.982	0.981

The implementation variable of the online learning system illustrates the influence of human resource competency, infrastructure, and supervision to the tune of 98.2%, with 1.8%

of the influence coming from other sources of unstudied components, according to the R-square value of 0.982.

Table 5. Hypothesis test results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Human Resource Competency ->Implementation of Online Learning Systems	0.352	0.355	0.094	3.761	0.000
Infrastructure ->Implementation of Online Learning Systems	0.453	0.430	0.108	4.195	0.000
Supervision ->Implementation of Online Learning Systems	0.272	0.273	0.118	2.313	0.021

Based on the information in Table 5, it can be explained and described from the 3 (three) stages of statistical testing that:

1. Based on the results of statistical tests, where the t statistic value is 3.761 (t statistic > 1.96), it indicates that the human resource competency variable is a factor that influences the implementation of the Online Learning System. Results from seven respondents who were thought to have a strategic role and represent their respective institutions were used to support this statistical test. The answer was that HR competencies, in this case is teaching staff (lecturers), have an important role in implementing online learning systems. Several previous studies also stated that competency factors influence the implementation of online learning systems, namely researches conducted by [14] and [15], hence they are able to support the results of the research.

2. According to the statistical test results of this study, specifically the t statistic, the implementation of the online learning system that is influenced by infrastructural elements is 4.195 (t statistic > 1.96). The test results of this research are also supported based on the results of interviews conducted, namely that network infrastructure and application infrastructure indicators have the greatest influence on infrastructure variables. This research is in line with other quantitative researches conducted by [16], and 17].

3. The supervision variable also has an impact on how the online learning system is implemented, as indicated by the t statistic of 2,313 (t statistic > 1.96) in this study's test findings. The statistical test results are supported based on the results of the interviews conducted, which show that the review and evaluation indicators have the most influence on the supervision variable. Research conducted by [18] also states that supervision has an effect on the implementation of the Online Learning system.

From the discussion above, it is clear that three factors—human resource competency, infrastructure, and supervision—have an impact on or favorably impact the deployment of the online learning system at the Private Higher Education (PTS) in Banten, Indonesia.. The three factors, namely human resource competency, infrastructure and supervision are key determinants in implementing the Online Learning system, the results for statistical tests prove these three variables have a magnitude influence of 98.2%, while 1.8% of other influence is not examined.

The role of human resource competency, infrastructure and supervision is very important for the success of the Online Learning system. The infrastructure variable has the greatest impact, followed by the competency of the human resources and, finally, the supervision variable, according to the test results.. Therefore, based on the order of influence according to the statistical test results, it is concluded with the results that infrastructure has the strongest or dominant role in the implementation of the Online Learning system system at Private Higher Education (PTS) in Banten, Indonesia, then human resource competency variable, and supervision variable being the last one.

Recommendations for strategies to improve the implementation of the Online Learning system were obtained through interviews with leaders from the Academic/Faculty Section, and brainstorming with several permanent lecturers. The recommended strategy is based on the strongest indicators related to human resource competency, infrastructure and supervision in the implementation of the Online Learning system. Some recommendations given in improving the implementation of the Online Learning system are developing guidelines for giving directions with training and education, guidance for using technology, utilizing resources, giving awards/appreciation to increase motivation, directing to understand self-abilities, technology and effective use of technology, asking for action , corrections/improvements and suggestions for findings from those who carry out supervision, increasing transparency in evaluations by creating a new evaluation menu, calling for and issuing standard rules and procedures governing e-learning (online learning).

The use of respondents to be larger and broader in scope so that it is not only Private Higher Education (PTS) in Banten Province but also PTN and PTS in other regions, so that there are common perceptions, procedures and policies in implementing the online learning system.

4 Conclusions

After conducting tests and interviews, the conclusions drawn as a result of the discussion and research answers are described and summarized as follows: 1) In the implementation of the Online Learning system, the competency of human resources, Infrastructure and Supervision has a positive influence. This explains and shows that improving the implementation of the Online Learning system by emphasizing the role of resource competencies is getting better. The successful implementation of the Online Learning system can be achieved by increasing the competencies of teaching staff (Lecturers) to become more competent; 2) Several recommendations for strategies to improve the implementation of the Online Learning system, namely organizing trainings, improving internet networks, increasing transparency in evaluations, and issuing regulations that support the implementation of Online Learning system.

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