

# Adoption of e-Learning in Indonesian Higher Education: Innovation or Irritation?

*by* Sutarto Hadi

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Article

## Adoption of e-Learning in Indonesian Higher Education: Innovation or Irritation?

Herry Porda Nugroho Putro\*

*Social Science Study Program, Faculty of Teacher Training and Educational Sciences Universitas Lambung Mangkurat, Indonesia, Email: [pordabanjar@ulm.ac.id](mailto:pordabanjar@ulm.ac.id)  
<https://orcid.org/0000-0003-2335-7152>*

Sutarto Hadi

*Mathematics Study Program, Faculty of Mathematics and Natural Sciences Universitas Lambung Mangkurat, Indonesia, Email: [sutarto@ulm.ac.id](mailto:sutarto@ulm.ac.id)  
<https://orcid.org/0000-0001-6382-0215>*

Ismi Rajiani

*Social Science Study Program, Faculty of Teacher Training and Educational Sciences Universitas Lambung Mangkurat, Indonesia, Email: [rajiani@ulm.ac.id](mailto:rajiani@ulm.ac.id)  
<https://orcid.org/0000-0002-43160501>*

Ersis Warmansyah Abbas

*Social Science Study Program, Faculty of Teacher Training and Educational Sciences Universitas Lambung Mangkurat, Indonesia  
Email: [ersiswa@ulm.ac.id](mailto:ersiswa@ulm.ac.id)  
<https://orcid.org/0000-0001-6963-6515>*

Mutiani

*Social Science Study Program, Faculty of Teacher Training and Educational Sciences Universitas Lambung Mangkurat, Indonesia, Email: [mutiani@ulm.ac.id](mailto:mutiani@ulm.ac.id), <https://orcid.org/0000-0003-4977-0623>*

### Abstract

1 Advancement of information technology has led a growing number of companies to use a digital approach to learning management. Indonesian universities are following the trend by adopting e-learning to boost lecturers' performance. However, e-learning is not without challenges and failures for the technology cannot be perceived as a solution to all problems. This study investigated the influential adoption factors to adopt e-learning in higher education from the perspective of technology, people and organization. The empirical data, which consisted of 320 valid datasets were collected from lecturers in Indonesia via a self-administered paper-based questionnaire, and Structural Equation Modelling (SEM) was employed to analyze the collected data. The finding of this research advanced our understanding of the dynamics of e-learning and refined the existing conclusions about perspectives of educators towards the adoption process of e-learning. Further, the current gaps between developed and developing countries on the adoption of e-learning provide an original reference on how technology, organization, and people sides influence the individuals' behaviors when adopting new technology.

### Keywords

E-learning, technology, performance, lecturer, Indonesia.

**Correspondence to** Herry Porda Nugroho Putro, Social Science Study Program, Faculty of Teacher Training and Educational Sciences Universitas Lambung Mangkurat, Indonesia, Email: [pordabanjar@ulm.ac.id](mailto:pordabanjar@ulm.ac.id), <https://orcid.org/0000-0003-2335-7152>

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The rapid progression of information technology (IT) has created a learning environment in universities conducive to a digital era. The challenges and opportunities of applying IT make both researchers and practitioners focus progressively on the integration of IT with learning systems known as e-learning (Julia & Marco, 2021). Thus, traditionally considered as a supporting role to deliver teaching services (Sarbaini et al., 2019), e-learning is currently leading the digital transformation providing competitive advantage to the universities (Netanda et al., 2019). E-learning is a common terminology that covers all possible juxtapositions between performing learning and technology (Rafiee & Abbasian-Naghneh, 2021). E-learning is also regarded as a tool for increasing instructional efficiency, examining the consequences of e-learning application and revealing factors supporting or inhibiting the adoption of e-learning.

Past studies have expressed confidence on the prospects of e-learning improving instructional efficiency (Beinicke & Kyndt, 2020; Wang et al., 2021). The empirical evidence displays various apprehensions that the adoption of IT does not always result in better learning outcomes. For instance, Zalazar-Jaime et al. (2021) found out that instead of freeing up the time of lecturers, the implementation of e-learning merely headed to an escalation in technology-related activities replacing administrative matters, without any enhancement in learners' satisfaction. A different point of view is also observable where some scholars assume technological determinism Szablewicz (2020) where they conceptualize technology at the first level and downplay the significance of vital social processes in producing organizational outcomes and regard the actors' attitudes and behaviors as functional and following established model. On the other hand, some studies take for granted the superiority of human activities over technology (Fregnan et al., 2020). The first stream, technological determinism, reflects an underlying positivist paradigm in which technology is a distinct independent measurable variable that has predictive consequences in organizations. The second stream treats technology as an emergent concept that evolves over time and context and thus reflects a more post-positivism perspective.

Indonesia as a developing country is technologically qualified and well-prepared for implementing e-learning in public universities (Sarbaini et al., 2019). However, the adoption of e-learning in Indonesia has not been acknowledged at this point to the degree and impact similar with developed countries or some developing countries. One of the essential reasons that e-learning has not been to a great extent grasped in Indonesia is the absence of adequate imminent examinations dedicated to figure out what variables drive and impact client's observations and points of view towards selection of e-learning advancements. Existing research has examined a relationship between e-learning and the quality of instruction Rahayu (2021) neglecting the effect of e-learning practices on university-level outcomes, such as lecturers' performance. Moreover, the existing e-learning models have been established in Europe and the United States reflecting westerners' practices and beliefs. Till date, very little is known about the use of e-learning and its impact on higher education outcomes particularly in South East Asia. Therefore, this research aims to fill this gap by investigating e-learning practices to improve lecturers' performance in operationally, relationally, and transformational manner in the workplaces of state universities in Indonesia by integrating technology factors, organization factors, and people factors.

This study comprises five parts. Subsequent to the introduction, the second part reviews previous studies to show the association between technology acceptance, organizational resources, employees' knowledge, e-learning adoption, and transformational performance. The focus is to prioritize on the readiness to adopt e-learning to boost lecturers' transformational performance. This literature review section also guided the generating of hypotheses of the study. The third part describes research design, research methodology, data collection methods and other techniques of data analysis used in the study. The fourth part explains the findings and results and discusses the data generated on the association between technology acceptance, organizational resources, employees' knowledge, e-learning adoption, and transformational performance within Indonesian university settings. The last section is the conclusion showing implications and future research as well.

## Literature Review

### i. E-learning

E-learning is integration between mechanisms and contents of learning and Information Technologies (Shin, 2019). Researchers studying the effects of IT on learning have defined e-learning as 'the (planning, implementation and) application of IT for both networking and supporting at least two individual or collective actors in their shared performing of teaching activities' (Pretorius et al., 2019; Yang et al., 2021). More recently,

it is described as ‘the application of computers and telecommunication devices to collect, store, retrieve, and disseminate learning material for instructional purposes’ (Garzón-Artacho et al., 2021). Researchers studying IT-enabled changes in the learning function have chosen to define e-learning as ‘the administrative support of the learning function in educational organizations by using internet technology’ (Julia & Marco, 2021); or being ‘a way of implementing learning strategies, policies, and practices in organizations through the conscious and direct support of and/or with the full use of channels based on web-technologies’ (Alsahlawi, 2021; Baydar & CETİN, 2021; Amsal et al., 2021; Martini et al., 2020).

Thus, we define e-learning in this study as the integration of IT and the instructional field of scholarly inquiry emphasizing all the teaching-and-learning content shared through IT that aims to make learning processes distinctive and consistent, more efficient across organizations for targeted users. Past literature has also suggested that e-learning has the potential to improve instructional service quality (Jordaan & Coetzee, 2021; Szablewicz, 2020), which is adhered upon in this study.

ii. *Technology acceptance*

Sayeed and Onetti (2018) claimed that factors impacting e-learning adoption could be theoretically categorized into technology, organization, and people factors. E-learning as a field of study is built around technology, prioritizing the discovery of its implementation consequences for learning interaction and practices. Empirical studies on e-learning rarely make a difference between technology and the notion of e-learning (Julia & Marco, 2021), analyzing it as an organizational-level that incorporates everything and everyone into some system (Rajiani & Ismail, 2019). The technology acceptance model suggests that actual usage behavior is dependent on the intention to use a technology as well as the attitude towards the system (Arfi et al., 2021). To supply extra readability about the e-learning concept as a configuration of the hardware, software and verbal exchange technology, Szablewicz (2020) identifies IT as a physical entity separated from people but comprises organizational processes. From this perspective, technology is regarded as an entity carrying out organizational processes, whilst actors’ behavior can be decided by recognized e-processes. The technical attributes of a new IT system significantly impact the end-users’ acceptance (Harlie et al., 2019). Prior studies point out that users’ genuine adoption conduct in the direction of a given technology and system is envisioned by external variables such as users’ appreciation of the new technology (Lipińska, 2021; Sarbaini et al., 2019). Since the characteristics of a technology are the essential determinants of users’ attitudes, this study argues that users’ grasp of the usefulness of an e-learning device may impact their adoption intention. The system usefulness of e-learning refers to advantages customers count on to receive from utilizing e-learning structures to their everyday work (Arfi et al., 2021). The unified theory of acceptance and use of technology (UTAUT) model is the most widely used with respect to the user’s acceptance of technology in university setting (Al-Sharah et al., 2021; Harlie et al., 2019). Under UTAUT, technology acceptance is determined with performance expectancy, effort expectancy, social influence, and facilitating conditions. Therefore, we hypothesize the following:

H1: *Technology acceptance is positively related to e-learning adoption.*

iii. *Organizational resources*

Drawing from resource-based view (RBV) perspective, certain types of resources owned and controlled by universities have the potential and promise to generate competitive advantage which eventually leads to superior higher educational performance (Rajiani & Ismail, 2019). An emphasis is given on organizational resources as they are positively associated to e-learning adoption. Universities with adequate resources are more prospective to afford facilitating conditions for e-learning adoption such IT infrastructure, training, and technical support (Harlie et al., 2019), which could enhance e-learning adoption in organizations for the following reasons.

There are a few benefits of making use of IT as an organizational resource. First, as a precarious organizational resource, a well-designed IT infrastructure of a company provides the foundation for the organization to implement e-learning (Kokoç & Altun, 2021). Second, sufficient training in e-learning provides faculty a deeper understanding of the importance of e-learning adoption and makes them more proficient in the relevant functions which boost their intention to adopt e-learning (Kaizer et al., 2020). Third, a strong technical support enables specialized academic staff to solve problems resulting from e-learning utilization. As a sign of organizational effort to implement e-learning, technical support develops user satisfaction with e-learning systems and the adoption process (Hamel, 2021; Yamoah, 2020). Therefore, we hypothesize the following:

H2: *Organizational resources are positively associated with e-learning adoption.*



iv. *Employees' knowledge*

Another potential problem found in people's side of e-learning adoption is the users' knowledge. It is contended that faculty with ample acquaintance are more prospective to accept new technologies such as e-learning systems. They possess sufficient knowledge and have a higher wisdom of technological self-efficacy (Al-Debei et al., 2021; Alnoor et al., 2020). They are confident that they are able to use the information system properly, and their sensitivity to the ease of use of e-learning systems is high. Further, individuals with sufficient knowledge incline to identify the prospect of technology and appreciate the tangible value of information systems making them willing to try new alternatives of e-learning (Kapo et al., 2020). Since perceived ease of use turns as a critical cause of technology acceptance, knowledgeable employees are more probable to adopt e-learning (Yuen et al., 2021). Based on the above, we propose:

H3: *Lecturer's knowledge is positively related to e-learning adoption.*

v. *Transformational Performance*

Agreeing with the work of Bissola and Imperatori (2013), e-learning can be clustered into operational, relational, and transformational e-learning practices. Operational e-learning practices are related to the administrative role of the learning function. Such practices are commonly called obligatory because these practices are usually compulsory for the presence of e-learning practice (Martini et al., 2020). Relational e-learning practices are concentrated on inter-personal relationships. The objective of such practices is first, to improve the quality of e-learning services, and second, to guarantee procedural and organizational implementation (Agarwal & Lenka, 2018). Transformational e-learning concerns with a strategic character to line up lecturers' attitudes and behavior with the organization's strategy (Kuechler & Stedham, 2018). These practices do not always accentuate lecturer's outcomes directly, but usually aim to align lecturer's behavior with university outcomes. Such a consideration is relevant for public universities in Indonesia currently struggling with strategic ambiguity as they want to mix educational accomplishments to maintain institutional identity and standing, but simultaneously to decentralize to occupy a captive market and generate revenue (Rajiani & Ismail, 2019). Based on the above, we propose the following:

H4: *e-learning adoption is positively associated with transformational performance.*

## Method

### Sample

A sample of 500 public university lecturers from South Kalimantan Province, Indonesia was selected for this study. The sample selection method applied purposive sampling based on the willingness of the members to join a WhatsApp social media group in order to participate in this research. The study was carried out from January to July 2021. Out of the 500 questionnaires sent, only 320 valid questionnaires were used for analysis which represented about 64 percent response rate.

### Instruments

Data collected was carried out by disseminating online questionnaires to assess the opinions of each participant toward each statement related to the topics. Due to strict rules imposed by the local government on outdoor movement and observe social distancing during the pandemic, online questionnaires were the only mode feasible for data collection.

### Procedure

This study used a quantitative method to test and identify variable dependency (Kot & Rajiani, 2020). This method is useful particularly in analyzing the interaction of technology factors, organization factors, and people factors toward adoption of e-learning in achieving transformational performance obtained through questionnaires. Respondents reported their level of agreement with each item using five-point Likert-type scale (1–strongly disagree; 5–strongly agree).

### Data analysis

This research employed Covariance Base (CB) -SEM application with the aid of SPSS AMOS software for data analysis and to scrutinize the relationship among the variables. The CB -SEM was applied in the model as there are existing theories to test (Hair Jr et al., 2020). The model consists of three endogenous variables which are technology acceptance (TA) with four items from (Venkatesh, 2021), organizational resources (OR) with four

items Sayeed and Onetti (2018), and employees’ knowledge (EK) with five items (Berkowsky et al., 2017). Furthermore, e-learning adoption (EA) with three items (Venkatesh, 2021), and transformational performance (TP) with three items Lepak et al. (2005) served as endogen variables. The items for transformational performance (TP) were knowledge management, organizational development, and strategic planning. These variables are displayed in Figure 1.

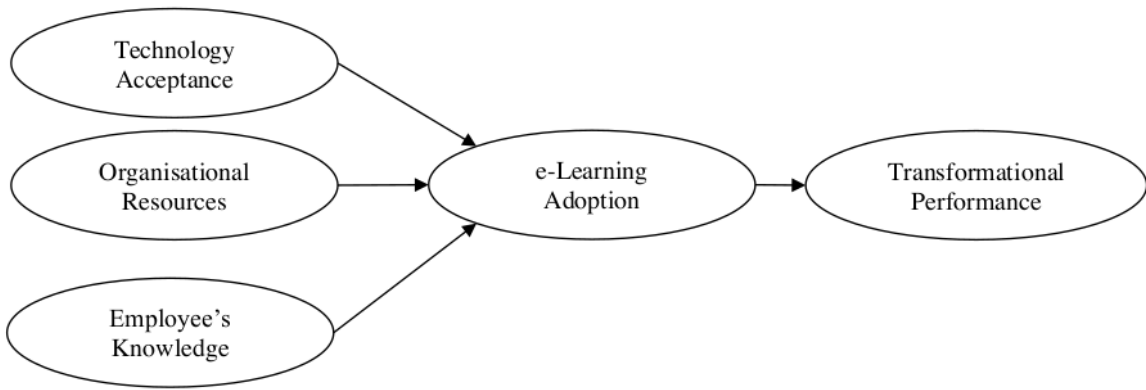


Figure 1. Theoretical Model of the study

Results

This section presents the results of the questionnaires as retrieved from the responses of the participants on adoption of e-learning toward the transformational performance of universities. Table 1 examines the convergent validity of the questionnaire indicating the association among items. To evaluate discriminant validity, the authors applied a factor loading model where only items with factor loading surpassed 0.50 stayed in the model (Hair Jr et al., 2020). The coefficient alpha was examined to determine reliability, and those values must be 0.60 or higher (Bonett & Wright, 2015).

Table 1. Convergent Validity

| Construct                             | Loading Factors | Cronbach Alpha | Means |
|---------------------------------------|-----------------|----------------|-------|
| TA1<--- Technology Acceptance         | 0.805           | 0.967          | 4.4   |
| TA2<--- Technology Acceptance         | 0.731           |                | 4.2   |
| TA 3<--- Technology Acceptance        | 0.814           |                | 4.5   |
| TA4<--- Technology Acceptance         | 0.842           |                | 4.5   |
| OR1<--- Organizational Resources      | 0.721           | 0.831          | 4.3   |
| OR 2<--- Organizational Resources     | 0.712           |                | 4.0   |
| OR 3<--- Organizational Resources     | 0.781           |                | 4.5   |
| OR 4<--- Organizational Resources     | 0.679           |                | 3.5   |
| EK1<--- Employees Knowledge           | 0.732           | 0.867          | 4.4   |
| EK.2<--- Employees Knowledge          | 0.764           |                | 4.5   |
| EK 3<--- Employees Knowledge          | 0.678           |                | 3.8   |
| EK4<--- Employees Knowledge           | 0.792           |                | 4.5   |
| EK 5<--- Employees Knowledge          | 0.675           |                | 3.5   |
| EA1<--- e-learning adoption           | 0.704           | 0.832          | 4.1   |
| EA2<--- e-learning adoption           | 0.721           |                | 4.3   |
| EA3<--- e-learning adoption           | 0.804           |                | 4.5   |
| TP1 <--- Transformational Performance | 0.897           | 0.865          | 4.5   |
| TP2 <--- Transformational Performance | 0.872           |                | 4.2   |
| TP3 <--- Transformational Performance | 0.860           |                | 2.5   |

The measurement model in Table 1 is evident of the loading factors which are above 0.50 signifying that the convergent validity of instrument is satisfactory. Table 1 also displays the result of Cronbach alpha coefficients for the instrument surpassing 0.60, which is the threshold for accepted reliability.

A full specified model of the current research is presented in Figure 2. The SEM demands small value for Chi-square statistic ( $\chi^2$ ) and probability (P) smaller than 0.05. Though these statistics are usually conveyed in structural equation modelling results, they are rarely considered and generally unnoticed as researchers prefer to other alternative measurements to evaluate the model fit (Alavi et al., 2020). The justification is that Chi-square statistic ( $\chi^2$ ) and probability (P) are strictly connected to sample size: the bigger is the sample, the smaller are the Chi-square statistics and the higher is the probability. Hu and Bentler (1999) had contended that limits approximate to 0.95 for Tucker-Lewis Index (TLI), 0.90 for Norm Fit Index (NFI), 0.90 for Incremental Fit Index (IFI), 0.06 for Root Mean Square Error of Approximation (RMSEA) sufficiently substantiate the acceptance of a precise fit between the suggested model and the data.

Other researchers have suggested goodness-of-fit statistics containing CMIN/DF (The Minimum Sample Discrepancy Function) expected  $\leq 2.0$  (Arbuckle, 2011); GFI (Goodness-of-Fit Index) approaching 0.90 and AGFI (Adjusted Goodness-of-Fit Index) close to 0.90 or greater (Hair et al., 2020). By referring to the  $\chi^2$  test ( $\chi^2 = 15.863$ ) and probability ( $P = 0.10$ ), this model do not meet goodness-of-fit of the model. But when examined from other measurement, the model indicates an appropriate fitness: CMIN/DF = 1.687 (expected smaller than 2), GFI = 0.983 (higher than 0.90), AGFI = 0.998 (higher than 0.90), CFI = 0.985 (higher than 0.95), TLI = 0.987 (higher than 0.95) and RMSEA = 0.086 (higher than 0.08).

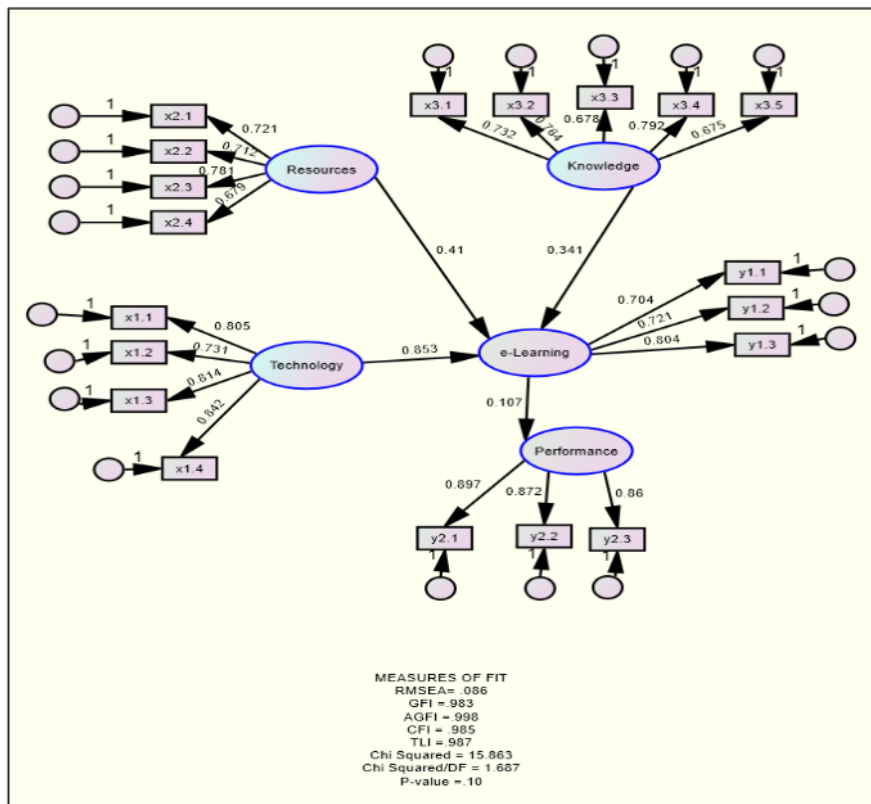


Figure 2. Measurement Model Assessment

The summary result of structural equation modelling is presented in Table 3. The results indicate that three paths are significant and one path is not.

**Table 3.** Path Analysis

| Constructs                               | Estimate | SE.   | CR.    | P     | Conclusion         |
|--|----------|-------|--------|-------|--------------------|
| Technology acceptance<br>→ e-learning    | 0.897    | 0.132 | 10.134 | ***   | Significant        |
| Organizational Resources<br>→ e-learning | 0.410    | 0.210 | 7.503  | ***   | Significant        |
| Employees Knowledge<br>→ e-learning      | 0.341    | 0.171 | 4.306  | 0.04  | Significant        |
| e-learning →<br>Performance              | 0.107    | 0.311 | 0.124  | 0.213 | Not<br>Significant |

Notes: \*\*\* =  $p < 0.00$ .

The critical ratio (CR) value of technology acceptance = 10.134 and significance of  $< 0.000$  confirm the first hypothesis: technology acceptance is positively related to e-learning adoption. Similarly, the critical ratio (CR) of organizational resources = 7.503 and significance of  $< 0.000$  confirm the second hypothesis: organizational resources are positively associated with e-learning adoption. Also, the critical ratio (CR) value of employees' knowledge = 0.341 and significance of 0.04 confirm the third hypothesis that employees' knowledge is positively related to e-learning adoption. However, the significance level of e-learning to transformational performance = 0.213  $> 0.05$  rejects the fourth hypothesis that e-learning adoption is positively associated with transformational performance.

### Discussion

Technological optimistic views propose that the IT opportunities for e-learning are never-ending: fundamentally all learning innovation can be reinforced by IT (Szablewicz, 2020). The results support this notion indicating that Indonesian universities have implemented HR strategies, policies, and practices in organizations through a mindful and engaged support with the full use of web technology. In other words, Indonesian public universities have shifted classical human resources management in terms of recruitment, selection, development, compensation, retention, evaluation, and promotion of personnel within an organization into virtual world.

The results also support the previous research that Indonesia is technologically qualified and well-prepared for implementing e-learning in public and business organizations to improve service quality (Rajiani & Ismail, 2019; Sarbaini et al., 2019). However, the practices are impliedly related to operational e-learning (Means = 4.5) concern the basic e-learning activities in the administrative areas like informing the absence of lecturers and personnel data administration and relational e-learning. The result (Means = 4.2) concern activities supporting basic learning processes such as recruiting and the selection of new class leaders, delivering lecture, performance management and appraisal, and rewards for students. Contrary to the findings in developed countries (Martini et al., 2020) and in line with studies in other developing countries (Ibrahim, 2021), it is estimated that e-learning cannot lead Indonesian universities to transformational practices (Means = 2.5). These activities are related to organizational change processes, strategic re-orientation, strategic competence management, and strategic knowledge management.

Indonesian universities have responded the rapid growth of technology by innovating both in technology and management which inevitably affect the employment nature (Abbas et al., 2018; Rahayu, 2021; Rajiani & Ismail, 2019). The expectations of lecturers are changing, which considerably influences the employee satisfaction. Accordingly, a series of dissatisfaction is happening as lecturers like other Indonesian public sector apparatus prefer to work conventionally instead of operating technology aided and information-based gadgets and online methods (Budi et al., 2021; Riana et al., 2020). Although the unified theory of acceptance and use of technology (UTAUT) model is validated within the Indonesian public university sector, the adoption of e-learning technology is not that simple due to the rigid culture. This is the reason why although the IT enormous investment has been conducted for more than three decades in Indonesia, the performance of the projects remains sluggish. To sum up, although partially implemented, at the strategic level e-learning is still not considered as innovation yet, instead it proves irritation and annoyance in the Indonesian universities.



### Conclusion, Implications and Limitations

The enormous dissimilarity, environmentally, economically, and technologically, in the market environment and management mechanisms between developed countries and Indonesia, produce difference research results on e-learning. The study revealed that, within Indonesians' public universities, nobody in a lower level dared to make decision openly without referring to the decisions of their respective superiors. The lecturers in these universities like to embrace a cautious demeanor which could best be portrayed as hanging tight for the letter containing a choice made by deans or a formal go or no-go choices made by rectors in open gatherings. Consequently, the act of accepting innovations like e-learning must be connected to the interests of top executives because of their ability to affect the participation. Therefore, if university leaders want to achieve their strategic objectives, the mere introduction of e-learning is not sufficient; rather, they need to take a holistic approach and increase the efficacy of the e-learning system by focusing on the quality of the services offered.

This study was confined to the selected universities of Indonesia, which was a limitation of this study and also raised the issues of generalizability and predictive cost of its outcomes for different universities. Extending this study to different regions of the country is additionally viable future lookup path that would possibly allow comparisons of effects with the cutting-edge findings. Furthermore, the facts had been amassed the usage of the questionnaire, from a single supply (faculty members) at one factor in time. To manipulate this possible problem, future research ought to gather facts from a couple of sources or at special factors in time or combine the order of the questions to use special scale types. Moreover, future research should utilize a longitudinal graph to supply extra strong causal relationships.

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