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# Digital Immigrant Lecturers' Acceptance of e-Learning Portal: An Application of UTAUT Model

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## Abstract

One of the challenges in implementing e-learning in tertiary institutions is the large number of lecturers who are categorized as digital immigrants. This group has the tendency of having difficulties with Information and Communication Technology (ICT) and showing some resistance to ICT. This study aims to determine the factors that influence digital immigrants in accepting e-learning at the University of Jambi using the Unified Theory Acceptance of User Technology (UTAUT) model. Factors to be tested include innovation, perceived usefulness, perceived ease of use, attitudes towards e-learning, risk perception, and acceptance of digital immigrant lecturers. The sample in this study was 55 digital immigrant lecturers. The results of this study indicate that there are as many as 6 out of 9 hypotheses accepted significantly. The finding reveals that the acceptance of e-learning is only influenced by the perceived usefulness.

**Keywords:** Immigrant Digital, e-learning, User Acceptance, UTAUT Model

## 1. Introduction

### 1.1 Introduce the Problem

E-learning is defined as the delivery of education in the form of activities that are relevant to learning through computer technology and the internet (Koohang & Harman, 2005). There are several reasons why lecturers have migrated to e-learning in their teaching and learning process recently. First, the increasingly accessible bandwidth and ease of managing e-learning portal. Second, the internet access is unlimited available for both lecturers and students. The last, online learning is recommended by WHO during this pandemic era (UNICEF, 2020). The closure of schools and campuses brings the implementation of an online mode of teaching and learning activities to anticipate further infections of the Covid19 amongst students and lecturers/teachers (Weeden & Cornwell, 2020).

E-learning continues to grow and develop because it provides comfort and flexibility for its users (Cappel et al., 2017). Moreover, educational institutions can conduct a low cost e-learning training thereby reducing the

operational costs of the institution (Golladay, Prybutok, & Huff, 2000). E-learning is also growing into a trend in higher education institutions because of its benefits, the learning flexibility that can be carried out anywhere, anytime and in accordance with the speed of students (Leung, 2003).

Regarding e-learning users among lecturers in tertiary institutions, there are two categories of lecturers; digital natives and digital immigrants. Digital native-born when technology already exists and lives in an environment in the digital world. They grow in a world where ICT has penetrated everywhere. Digital native people have features that include digital literacy and are always connected (McMahon & Pospisil, 2005). In contrast, digital immigrants (DI) are new to this environment and are not comfortable with technology (Zur & Walker, 2011). Among them is they prefer to talk to people via smartphones rather than text (Vodanovich, Sundaram, & Myers, 2010).

Perhaps the same as in other countries, the world of higher education in Indonesia is currently still dominated by senior lecturers who are DI lecturers. They must carry out online learning during the COVID-19 pandemic using Moodle platform. This LMS has resource and activity features that allow lecturers to carry out learning with various methods that are applied online. Lecturer activities on the e-learning portal are creating classes, registering lecture participants, uploading material, making video streaming, chatting with participants and co-lectures, and engaging in discussion forums (Sancar & Cagiltay, 2008). But still a big question is whether DI lecturers will be able to accept this LMS well. DI lecturer acceptance of the e-learning portal will determine a success of e-learning. A system is said to be successful if it is well received by the user (Venkatesh & Smith, 2003). User acceptance of information technology can be defined as a desire to apply information technology to help a job.

There are currently no reports on how they respond to an e-learning portal. This paper reveals the factors that influence the acceptance of digital immigrant lecturers to Jambi University's e-learning tools <https://elearning.unja.ac.id>. The DI lectures' responses on acceptance are evaluated by using the Unified Theory of Acceptance and Use of Technology (UTAUT) theory, namely a theory to measure user acceptance of technology which is a development of technology acceptance theory (TAM). According to the UTAUT model the acceptance of digital immigrant lecturers may be influenced by various factors, such as perceived usefulness, perceived ease of use, attitudes towards e-learning and risk perception.

### *1.2 Research Model and Hypotheses*

Innovation is related to the level where individuals accept new ideas and make innovative decisions independently from other people (Okumus, Ali, Bilgihan, & Ozturk, 2018). Meanwhile, the perception of usefulness is defined as the level at which an individual believes that the use of a particular technology will be able to increase its productivity (Davis, 1989). Therefore, one of the reasons people want to use a computer application is when they believe that the application can make their work better.

Meanwhile, perceived ease of use is defined as the degree to which an individual believes that the use of certain technologies will be free of effort (Davis, 1989). Jambi University's e-learning portal was developed from the e-learning content management system (CMS), which is the latest version of Moodle. Thus the continuous innovation from Moodle will impact the ease of use by digital immigrant lecturer users. Panda-Garcia states that there is a positive relationship between perceived usefulness and ease of use (Pando-Garcia, Periañez-Cañadillas, & Charterina, 2016).

Attitude to behavior measures the user's interest in using new technology. Thus, attitude can be defined as the feelings of digital immigrant lecturers to use e-learning in learning (Pando-Garcia et al., 2016). In high school, teachers' attitudes play an important role in the pursuit of e-learning (Xhaferi, Farizi, & Bahiti, 2018). A study revealed that ease of use significantly influences usage behavior (Abramson, Dawson, & Stevens, 2015).

Hamid *et al.* reported that there is a positive relationship between perceived ease of use and desire to continue using e-government (Hamid, Razak, Bakar, & Abdullah, 2016). In addition, a study showed that ease of use and attitude toward the use of multimedia increase the desire to use it (Weng, Yang, Ho, & Su, 2018).

Yanget al./ (Yang, Pang, Liu, Yen, & Michael Tarn, 2015) emphasized that risk perception is a general measure of feelings about uncertainty, discomfort, and uncertainty while carrying out online activities. intuitively people will not use technology if the perception of risk is high. The relationship between these variables is illustrated in Figure 1, and the following hypothesis will be tested.

H1: there is a significant positive effect of innovation on the perception of the useful of e-learning.

H2: there is a significant positive effect of innovation on the perceived ease of use of e-learning

H3: there is a significant positive influence on the perceived ease of use of e-learning on the perception of the useful of e-learning digital immigrants.

H4: there is a significant positive impact of perceived usefulness on e-learning attitudes,

H5: there is a significant positive correlation between the perceived ease of use e-learning with attitude toward e-learning.

H6: there is a significant positive correlation between the perceived usefulness of e-learning with the acceptance of e-learning.

H7: there is a significant positive correlation of e-learning ease of use with e-learning acceptance.

H8: there is a significant positive correlation between attitude toward e-learning and acceptance of e-learning.

H9: there is a significant negative correlation between risk perception and acceptance of e-learning

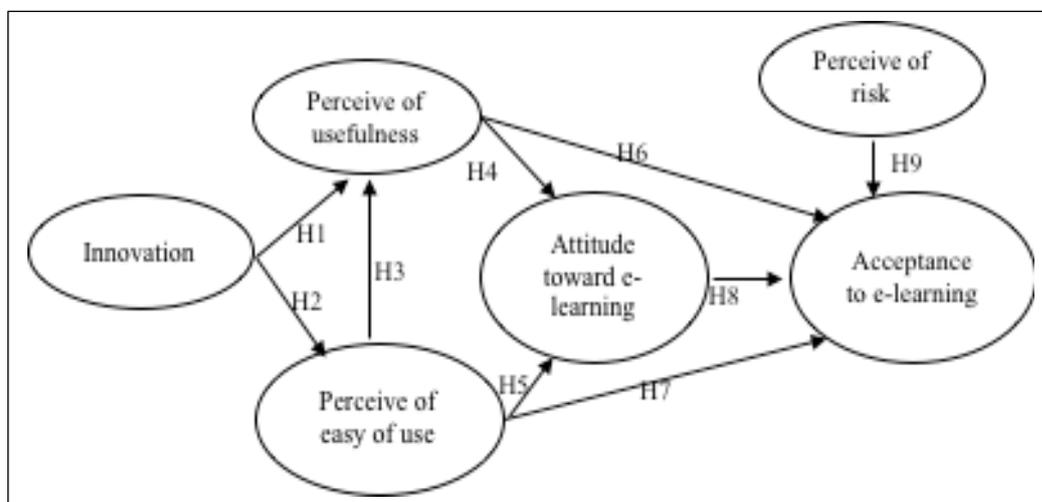


Figure 1: Digital immigrant acceptance model for e-learning portal

## 2. Method

This type of research was ex-post facto research. The population in this study were all Jambi University lecturers who were still active and were born before 1980. The sample size was obtained using the Yount's table, which is 10% of the population size so that a sample size of 55 digital immigrant lecturers was obtained. The sampling technique is a simple random sampling technique. Based on the results of the sampling, it was obtained 30 women and 25 men.

Before conducting the survey, the steps are 1) provide training in the use of e-learning for selected digital immigrant lecturers, 2) assisting digital immigrant lecturers in implementing e-learning using WhatsApp social media, 3) e-learning implementation for 3 months.

This study did not create a new instrument to measure the acceptance of digital immigrant lecturers in e-learning. The instrument items are adapted from (Lawson-Body, Willoughby, Lawson-Body, & Tamandja, 2018). Factors

and references to user acceptance include usefulness, ease of use, innovation, attitudes towards e-learning, risk, and acceptance of e-learning. Data on acceptance of digital immigrants to e-learning is collected through online surveys. The collected data then processed with PLS data processing software (Ghozali, 2014). The response scale used follows a Likert scale with five values: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly agree.

Before testing the hypotheses, the reliability and validity tests are conducted using factor analysis, convergent validity, discriminant validity, and reliability analysis.

### 3. Result

#### 3.1 Data Description

Table 1 shows the variables and number of items in the study. Perceptions about the benefits of e-learning have the highest average compared to others

Table 1: Data Description

| Variable                   | Number of item | Average | Deviation Standard |
|----------------------------|----------------|---------|--------------------|
| Perceived usefulness       | 5              | 4.31    | 0.51               |
| Perceived ease of use      | 4              | 4.02    | 0.67               |
| Innovation                 | 4              | 3.86    | 0.59               |
| Attitude toward e-learning | 5              | 4.05    | 0.55               |
| Perceived risk             | 4              | 2.37    | 0.39               |
| Acceptance of e-learning   | 3              | 4.19    | 0.50               |

#### 3.2 Factor Analysis

Factor analysis is used to look for factors that can explain the relationship between various independent indicators. The minimum loading value used is greater than  $\pm 0.30$ ; and loading  $\pm 0.50$  or greater is significant (Hair, Black, Babin, & Anderson, 2014). Table 2 shows factor loadings, and items taken are items with factor loadings greater than or equal to 0.5. Thus, items with a factor loading of -0.655 were discarded so that the total items used in this study were 24 items spread across all factors.

Table : Factor Loadings

| Item Code | Usefulness | Ease of use | Innovation | attitude | risk | Acceptance |
|-----------|------------|-------------|------------|----------|------|------------|
| U1        | 0,826      |             |            |          |      |            |
| U2        | 0,687      |             |            |          |      |            |
| U3        | 0,781      |             |            |          |      |            |
| U4        | 0,721      |             |            |          |      |            |
| U5        | 0,651      |             |            |          |      |            |
| E6        |            | 0,826       |            |          |      |            |
| E7        |            | 0,836       |            |          |      |            |
| E8        |            | 0,808       |            |          |      |            |
| E9        |            | 0,821       |            |          |      |            |
| I10       |            |             | 0,796      |          |      |            |
| I11       |            |             | 0,767      |          |      |            |
| I12       |            |             | 0,733      |          |      |            |
| I13       |            |             | 0,715      |          |      |            |
| A14       |            |             |            | 0,794    |      |            |
| A15       |            |             |            | 0,807    |      |            |
| A16       |            |             |            | 0,815    |      |            |
| A17       |            |             |            | 0,776    |      |            |

|     |       |        |
|-----|-------|--------|
| A18 | 0,622 |        |
| R19 |       | 0,761  |
| R20 |       | 0,698  |
| R21 |       | -0,565 |
| R22 |       | 0,596  |
| P23 |       | 0,878  |
| P24 |       | 0,808  |
| P25 |       | 0,805  |

### 3.3 Convergent Validity

Convergent validity means that a set of indicators represents one latent variable. The representation can be expressed by using the average value of the extracted variant (AVE). Fornell and Larcker (Fornell & Larcker, 1981) suggest that the AVE value is at least equal to 0,5. Table 3 shows that all factors have a AVE value greater than 0.5 which indicates that convergent validity is acceptable for all factors.

Table 3: Convergent Validity

| Code | Factor and Item   | Loading Factor | AVE   |
|------|---|----------------|-------|
|      | <b>Perceived Usefulness (PU)</b>  |                | 0,542 |
| U1   | The use of online learning will improve my teaching performance   | 0,826          |       |
| U2   | I prefer teaching with assisted e-learning than teaching without e-learning at all                          | 0,687          |       |
| U3   | Using e-learning is a fun teaching experience   | 0,782          |       |
| U4   | Using e-learning, I was able to present my teaching materials in a variety of media                         | 0,721          |       |
| U5   | in general, e-learning is an efficient way to teach   | 0,651          |       |
|      | <b>Perceived Ease of Use (PEoU)</b>   |                | 0,677 |
| E6   | The e-learning portal makes it easy for me to create virtual classes, keep teaching materials, and evaluate | 0,827          |       |
| E7   | The Universitas Jambi e-learning portal is easy to use  | 0,836          |       |
| E8   | I can easily provide instructional materials and learning resources when using e-learning                   | 0,808          |       |
| E9   | The teaching of e-learning is taught faster to students   | 0,821          |       |
|      | <b>Innovation (I)</b>   |                | 0,568 |
| I10  | I accepted the e-learning portal and tried to understand all the features available on the portal           | 0,796          |       |
| I11  | I advise my colleagues to use e-learning in lectures  | 0,767          |       |
| I12  | I can explain how to use e-learning in lectures with colleagues   | 0,733          |       |
| I13  | My colleague also used e-learning   | 0,715          |       |
|      | <b>Attitudes toward e-learning (AtE)</b>  |                | 0,587 |
| A14  | I am satisfied with the quality of the e-learning portal  | 0,794          |       |
| A15  | I can teach students well by using e-learning   | 0,807          |       |
| A16  | e-learning helped me to achieve my lecture targets  | 0,815          |       |
| A17  | In general, I am satisfied with e-learning technology in lectures   | 0,776          |       |
| A18  | In general, my attitude towards e-learning in lectures is positive  | 0,621          |       |
|      | <b>Perceived of Risk (PoR)</b>  |                | 0,677 |
| R19  | After using e-learning I had difficulty teaching face to face   | 0,903          |       |
| R20  | I find it hard to carry out lectures if there is no internet access   | 0,740          |       |
| R22  | Connection interruptions will interfere with my teaching schedule   | 0,718          |       |
|      | <b>Acceptance of e-learning (AoE)</b>   |                | 0,690 |
| P23  | I recommend e-learning to my fellow lecturers   | 0,871          |       |
| P24  | I will learn more about the e-learning portal   | 0,805          |       |
| P25  | I will use e-learning in my future lectures   | 0,815          |       |

### 3.4 Discriminant Validity

Discriminant validity relates to the extent to which a construct is completely different from other constructs and is not highly correlated. One way that can be used to test discriminant validity is to compare the square root of the AVE for each construct with the correlation value between constructs in the model. Good discriminant validity is shown from the square root of AVE for each construct which is greater than the correlation between constructs in the model. Based on the results in Table 4, it can be seen that the AVE root value of each construct is higher than the correlation between constructs so that it meets discriminant validity.

Table 4: AVE Root Value and Latent Variable Correlation

| Variable | AVE   | Square AVE | AoE          | AtE          | I            | PEoU         | PoR          | PU           |
|----------|-------|------------|--------------|--------------|--------------|--------------|--------------|--------------|
| AoE      | 0.690 | 0,831      | <b>0,831</b> |              |              |              |              |              |
| AtE      | 0.587 | 0,766      | 0,571        | <b>0,766</b> |              |              |              |              |
| I        | 0.568 | 0,753      | 0,577        | 0,733        | <b>0,753</b> |              |              |              |
| PEoU     | 0.677 | 0,823      | 0,471        | 0,776        | 0,676        | <b>0,823</b> |              |              |
| PoR      | 0.677 | 0,823      | -0,350       | -0,193       | -0,243       | -0,186       | <b>0,823</b> |              |
| PU       | 0.542 | 0,736      | 0,625        | 0,736        | 0,669        | 0,695        | -0,214       | <b>0,736</b> |

### 3.5 Reliability Analysis

Reliability analysis is calculated using Cronbach's Alpha or Rho coefficient with a minimum magnitude of 0.7 (Fornell & Larcker, 1981). This value reflects the reliability of all indicators in the model.

Table 5: Cronbach Alpha and Rho Values

| No | Variable                   | Cronbach Alpha | Rho   |
|----|----------------------------|----------------|-------|
| 1  | Perceived Usefulness       | 0,787          | 0,799 |
| 2  | Perceived Ease Of Use      | 0,841          | 0,844 |
| 3  | Innovativeness             | 0,749          | 0,764 |
| 4  | Attitude Toward E-Learning | 0,822          | 0,834 |
| 5  | Perceived Risk             | 0,739          | 0,966 |
| 6  | Acceptance Of E-Learning   | 0,775          | 0,777 |

Table 5 shows that all factors have a Cronbach Alpha or Rho coefficient of 0.7. Thus it can be concluded that the indicators used in this study are reliable.

### 3.6. Hypothesis testing

To test the nine hypotheses given, PLS is used. Testing with PLS does not require normal data distribution. Table 6 presents a summary of the results of hypothesis testing (hypotheses 1 through hypothesis 9) where there were 6 hypotheses that were accepted and the rest (3 hypotheses) were rejected. Hypotheses are accepted when the t-statistic value is  $> 1.96$  and the p-value is  $< 0.05$ .

Table 6: Summary of Hypothesis Testing

| No. | Hypothesis  | T - statistics | P-values | Decision |
|-----|---|----------------|----------|----------|
| 1   | Innovativeness > Perceived Usefulness             | 2,777          | 0,006    | accepted |
| 2   | Innovativeness > Perceived Ease of Use            | 6,908          | 0,000    | accepted |
| 3   | Perceived Usefulness > Attitude Toward E-Learning | 2,353          | 0,019    | accepted |
| 4   | Perceived Usefulness > Acceptance of E-Learning   | 2,747          | 0,006    | accepted |
| 5   | Perceived Ease Of Use > Perceived Usefulness      | 6,802          | 0,000    | accepted |

|   |   |       |       |          |
|---|---|-------|-------|----------|
| 6 | Perceived Ease Of Use > Attitude Toward E-Learning    | 3,243 | 0,001 | accepted |
| 7 | Perceived Ease Of Use > Acceptance Of E-Learning      | 1,155 | 0,248 | rejected |
| 8 | Perceived Risk > Acceptance of E-Learning             | 1,337 | 0,182 | rejected |
| 9 | Attitude Toward E-Learning > Acceptance Of E-Learning | 1,704 | 0,089 | rejected |

#### 4. Discussion

This study reveals the structural relationship between the variables of innovation, perceived usefulness, perceived ease of use, attitudes toward e-learning, risk perception, and the acceptance of lecturers in the category of digital immigrants towards e-learning. Based on the hypothesis testing that has been done it was revealed that six of the nine hypotheses were accepted, namely: learning innovation using e-learning tools related to perceived usefulness and perceived ease of use of e-learning, perceived usefulness related to attitudes and acceptance of DI lecturers towards e-learning, and perceptions about ease of use related positively with the perception of usefulness and attitude towards e-learning. On the other hand, the perceived ease of use, risk perception, and attitude toward e-learning are not related significantly to the acceptance of DI lecturers on e-learning.

On the basis of the first hypothesis testing, it can be interpreted that the higher the level of DI lecturer innovation on e-learning technology, the higher the perceived usefulness of the technology. Our findings show that DI lecturers are willing to use e-learning and influence other lecturers to use it. Thus the DI lecturer believes that e-learning is useful to improve the quality of learning. This is in line to Yi et al. (Yi, Fiedler, & Park, 2006) that people who have a high level of innovation believe in the benefits of IT.

Furthermore, the second hypothesis has been answered that the higher the innovative level of a lecturer, the higher the perceived ease of use of e-learning. The average respondent answered agree with the items e-learning ease of use. According to Arsanti and Yuliasari (Arsanti & Yuliasari, 2018), when someone has a high level of innovation then he will perceive that technology will be easy to use.

The hypothesis states that the higher the DI lecturers' perceptions of the usefulness of e-learning, the better their attitude towards e-learning tools have been significantly accepted. In other words, the attitude toward the new technology will be influenced by how perceptions of usefulness are obtained. This is in accordance with the findings of Sayid and Echchabi (Sayid & Echchabi, 2013) who found that the perception of the usefulness of mobile banking applications affects individual attitudes towards the application.

Another important hypothesis answer is the higher the perception of the usefulness of e-learning, the higher the acceptance of DI lecturers towards e-learning. The findings show that both the average score of perceived usefulness and acceptance of e-learning is high. Thus it can be interpreted that DI lecturers receive e-learning because they feel the benefits.

Meanwhile the perceived ease of use was found to be positively related to attitudes towards e-learning, which means that the higher the perceived ease of use, the better the attitude towards e-learning. This finding is reinforced by the results of Hsu's study which states that when users feel the simplicity of an innovation product it will be considered to help improve performance (Hsu, 2016).

This study examines the hypothesis that is rarely tested, that is, perceived ease of use is positively related to DI lecturers' acceptance of e-learning. The test results show that these two variables are not significantly related. Thus even though the level of DI lecturer acceptance of e-learning is high but it is not caused by the perception of ease of use. The level of acceptance is more determined by the perception of usefulness and attitude towards e-learning. The rejection of this hypothesis is likely due to the standard deviation of perceived ease of use that is higher than other variables, which means that the skills of DI lecturers in using e-learning with each other are quite different but they still accept e-learning for learning.

Contrary to the hypothesis, this study also revealed that attitudes towards e-learning were not related to DI lecturers' acceptance of e-learning. Amer *et al.* (Amer, Ahmad, & Jo, 2013) supports this result in their research

which found that attitudes towards e-learning did not influence the desire to use e-learning. DI lecturers may implement e-learning as useful and easy to use even if they do not have a positive attitude towards e-learning.

The results of the study showed that the skills of digital immigrant lecturers using e-learning were not evenly distributed, meaning that they still felt difficulty in operating e-learning. These results reinforce that digital immigrants including lecturers have a perception that technology is difficult to use even though they realize that the technology is useful and they accept it. Thus, further research is needed on the e-learning interface that facilitates digital immigrant lecturers in implementing e-learning.

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