

Applying of the e-learning system evaluation uses the e-learning readiness model:

A case study in Janabadra University Yogyakarta

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Abstract

E-learning and other online-based learning media innovations were introduced to improve the quality of education. The main purpose of this study is to measure e-learning readiness from the point of view of students at Faculty of Engineering Janabadra University Yogyakarta Indonesia. A measurement model of e-learning readiness presented by Aydin and Tasci is used to measure the readiness of the organization and their environment; culture readiness; human resources readiness; financial readiness; technology readiness; readiness of learning material. The e-Learning Readiness (ELR) model applied in this study (1, 2, 3, and 5) provides the results of categories that are ready for e-learning implementation, but require a slight increase in several factors. Improvements need to be made to factors that have a low *ELR* score including organizational culture by obtaining an *ELR* \bar{x} score = 0.8 and the average score of \bar{x} = 2.0. While for financial gain factor achievement score of *ELR* \bar{x} = 0.9 and the average score of \bar{x} = 1.4. This means that two factors are included in the category not ready and needs a lot of work for the application of e-learning. Improvements need to be made to these two factors so that the implementation of e-learning could be run optimally. The results of this study indicate that the Faculty of Engineering, University of Janabadra Yogyakarta is at the level of "Limited Readiness" for the e-learning implementation.

Keywords:

E-learning system; E-readiness model; Measurements readiness; Students and staff; University

1. Introduction

E-learning is commonly referred to as the intentional use of networked information and communications technology in teaching and learning [1]. A number of other terms are also used to describe this mode of teaching and learning. They include online learning, virtual learning, distributed learning, network and web-based learning [2, 3]. Fundamentally, they all refer to educational processes that utilize information and communications technology to mediate asynchronously as well as synchronous learning and teaching activities [4 – 6]. E-learning applications have become a necessity for universities to support their academic activities [7], [10]. The application of e-learning often encounters obstacles, including the unpreparedness of the University's components in using the system [11], [14]. At that level, resistance/rejection to the implementation of e-learning is not apparent, but management still needs to convince all Faculty components, such as lecturers, students, and educational staff, that the implementation of e-learning will provide many benefits [11 – 14].

2. Background and Objectives

The development of e-learning applications used in the teaching and learning process has become one of the main concerns in the development of Information System applications at the University of Janabadra. The increasing attention to e-learning is directly related to increasing access to information and communication technology and decreasing operational costs [3], [7]. There are several reasons behind this increase in e-learning implementations [10], [12]. One of the most significant reasons is related to the cost of training [8]. Information and communication technology supported by multimedia-based learning and teaching is also one of the factors that support the growth of e-learning [9], [17]. The increase of teaching staff who utilize information

and communication technology in supporting teaching is also a factor that causes attention to the development of e-learning [11]. Students also begin to hope that their lectures are supported by web-based material and technology so that they can be accessed anytime and anywhere online. E-learning is developed in a way.

The University creates an ideal learning environment, where interactions between students are accommodated in the learning process. The emergence of trends in e-learning development, the University began to complete its learning facilities with the application [9], [14]. Likewise, the Faculty of Engineering, University of Janabadra Yogyakarta has begun to develop e-learning applications. With the e-learning application, students and lecturers are expected to have the opportunity to interact and collaborate in an effective and efficient way, without the need for physical presence in the same place. The e-learning application has been developed and started to be used in the Faculty of Engineering. Nevertheless, no study has been conducted to obtain an overview of the readiness of all components in the Faculty of Engineering in implementing e-learning [9], [19].

One of the problems in the development of e-learning is the lack of knowledge and ability to use technology [11], [13]. Usually, this happens because the learning actors (in this case lecturers and students) prefer to accept conventional learning practices that have been used, rather than the new way of using Information Technology. The reason for choosing e-learning readiness as the topic of this research is because of issues relating to the development of e-learning [5]. E-learning applications that have been built are often not used optimally so that they cannot provide real benefits in the lecture process. To be able to improve lectures with e-learning applications, the Faculty must know how the organization is prepared to use e-learning so that it can optimize this e-learning empowerment initiative [11].

The purpose of this research is to measure organizational readiness within implementing e-learning [8], [12, 13].

The results of the research can be used as material for discussion at the Faculty of Engineering, the University of Janabadra about the readiness of the organization to implement e-learning. This research is expected to reveal factors or areas that have a strong impact in supporting the success of e-learning, and factors that are considered weak or need to get special attention so as not to become an obstacle in the development of e-learning.

3. Formulation Problem

The formulation of the problem in this study is how to measure e-learning readiness, as an effort to support the successful implementation of e-learning.

4. Research Methods

The research method that will be used is a qualitative method, namely the research method used to examine the condition of natural objects [12, 13]. The research instrument consisted of 6th (sixth) indicators to be analyzed related to e-learning readiness [5], [18, 19] namely:

1. The readiness of the organization and their environment;
2. Culture readiness;
3. The readiness of human resources (human resources readiness);
4. Financial readiness;
5. Technology readiness;
6. The readiness of learning/content material (content readiness).

The indicators will then be revealed in the questions/statements to be submitted in the form of an interview tool, namely the questionnaire. The measurement scale used refers to the type of Likert

scale coded in 1, 2, 3, 4, and 5. Determination of the level of organizational readiness in the implementation of e-learning is based on the results of the research conducted by [1], [5], [7, 8], which can be illustrated in Figure 1.

After all the data was collected, an analysis was carried out using the ELR model. The analysis is as follows.

1. Scores used in the assessment sheets are 5, 4, 3, 2, and 1 for each question. After the assessment sheet is filled in by the respondent, the total score will be obtained, then the final average is calculated using the formula:

$$\bar{x} = \frac{\sum x}{n} \dots\dots\dots (i)$$

Description:

\bar{x} = final average

Σ = total score

n = number of respondents

The average score of 3.41 is the minimum score for the level of readiness for the application of e-learning, $\bar{x}_{ELR} = 3.41$ which means the average score of each question, the average score of the questions for the same factor and the total average score from all questions must be $\bar{x} \geq \bar{x}_{ELR}$ to be considered ready in the application of e-learning [8].

For the range of values and categories described by the measurement scale describes the point scale below [7], [16, 17]:

1 – 2,6 = There is no readiness and needs hard work to achieve success.

2,7 – 3,4 = Not ready and requires some work to achieve success.

3,5 – 4,2 = Ready but still requires a little improvement.

4,3 – 5 = really ready for e-learning implementation.

First, the validity and reliability test of the questionnaire was submitted. This validity test was carried out earlier in a study conducted by [3, 4], [9, 10], [14]. The items in the questionnaire that were valid then will be disseminated to the academic components in the Faculty, namely lecturers, final semester students, and educational staff. Respondents were determined to be 10% of the social situation. Surveys will be conducted on people who are seen to know about the social situation [15]. Determination of data sources on the people interviewed was done purposively, which was chosen with certain considerations and objectives. This will be determined later, related to the questions to be compiled. In this study, descriptive hypotheses were not formulated. Statistical techniques for data analysis are done by calculation so Then the formulation of the problem can be answered quantitatively [2], [4], [10]. The descriptive problem formulation is answered through the following steps:

- a) Determine in advance the ideal score/criterion, namely the score determined with the assumption that each respondent in each question gives the answer with the highest score.
- b) Calculating the average score for each question by calculating the average score given by the respondent (a group of respondents).
- c) Calculate the average score for each indicator by calculating the average score for each question in the indicator.
- d) Analyze the results of the average score for each indicator, to determine the level of readiness.

The technique of collecting data is through observation, questionnaires and the views of researchers on the Faculty's social situation. To complement the researchers' insights, literature studies were conducted.

5. Results and Discussion

5.1 Samples and Data Collection Techniques

Respondents in this study were lecturers, final semester students, and educational staff at the Faculty of Engineering Janabadra University Yogyakarta. The number of samples successfully obtained for each group is as follows:

- 1) Lecturers = 7 people
- 2) Students = 80 people
- 3) Educational staff = 12 people

Data collection is done through questionnaire surveys. The data used for research includes initial data that are useful for formulating problems and primary data used to assess the readiness of e-learning [19]. Primary data are taken from the study population through questionnaires for respondents from lecturers, active students and selected educational staff using questionnaire instruments. Sampling for respondents based on criteria with consideration related to the application of e-learning readiness as follows:

- a) Respondents are seen as able to provide clear descriptions and conclusions about the data that the school has.
- b) Respondents are seen as having broad views and knowledge about the data held by the school.
- c) Respondents are seen as competent regarding the implementation of e-learning in schools.

5.2 Analysis of Questionnaire Results

The concept of analyzing the results of the questionnaire for e-learning readiness is based on the development of the Chapnick and Rosenberg model instruments conducted by [2], [8], [18].

Unfortunately, determining the condition of the score obtained is adjusted to the object of the

condition of research. To determine the e-learning readiness condition of the research object, the following steps are carried out:

1. Each respondent's answer value is added per each questionnaire for all respondents;
2. Then the total value of each item in the questionnaire is averaged;
3. The total value of the average for all questionnaires is then analyzed based on the e-learning Readiness Level Score table;
4. The table groups the conditions of e-learning readiness into 3 (three) categories, namely (1) There is no readiness; (2) Limited readiness; (3) Readiness has matured.

Table 1 is the e-learning Readiness Level Scoring. Each condition has a range of scores with detailed scores.

The level of "No readiness" states that there is resistance to the plan for changing learning towards e-learning. The management must concentrate on this management change effort. It even needs to be considered and reviewed, whether e-learning is the right way to achieve organizational goals. The level of "limited readiness" shows that in this condition resistance is not an obstacle, but management still needs to convince all organizational components of the benefits of changes to the e-learning direction.

The "Readiness level is mature" states that the process towards learning changes can be done quickly. This condition is a condition desired by every organization in implementing e-learning. Management has the flexibility and flexibility in determining the change method chosen.

5.3 Analysis Results

The results of the questionnaire analysis indicate that the Faculty of Engineering is at the level of "limited readiness" with a score of 70.45 for lecturers; 51.41 for education staff; and 53.30 for students. **Table 2** shows the detailed score for each indicator.

Furthermore, as shown in [Table 3](#), it can be seen that the learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00. Thus, these two factors need to get special attention at the time of the implementation of e-learning. This condition can be seen more clearly through the graph in [Figure 2](#).

As shown in [Table 4](#) below, that is the realization of the distribution of questionnaires for the Respondents.

The number of questionnaires that can be processed is only 95 questionnaires from 100 questionnaires that have been distributed. For lecturer respondents who filled out the questionnaire is 4 person, while for the education staff respondents who filled out the questionnaire is 11 and for Student respondents who filled out the questionnaire as many as 80 people, that is combined Student in the first year to the fourth year students.

5.4 ELR model Analysis

The recapitulation of the results of filling out the questionnaire by respondents based on the tracking analysis of the scores on each question submitted in accordance with the analysis method using the ELR formula of the model above can be seen in [Figure 3](#) below.

Furthermore, the graph shown in [Figure 3](#) is data that has been obtained and then presented based on the data in [Table 5](#) follows.

6. Conclusion

The results of the measurement of e-learning readiness indicate that the Faculty of Engineering, the University of Janabadra Yogyakarta is at the level of "Limited Readiness". Lecturers, students, and educational staff share the same viewpoint. At that level, resistance/rejection of the

implementation of e-learning is not visible, but management still needs to convince all components, such as lecturers, students, and educational staff, that implementing e-learning will provide many benefits. Organizational culture and financial readiness factors become things that need to be considered in the preparation of e-learning implementation. This is because the two things have the smallest readiness score. The e-learning readiness (ELR) model applied in this study (1, 2, 3, and 5) provides the results of categories that are ready for e-learning implementation, but require a slight increase in several factors. Improvements need to be made to factors that have a low ELR score including organizational culture by obtaining an ELR \bar{x} score = 0.8 and the average score of \bar{x} = 2.0. While for financial gain factor achievement score of ELR \bar{x} = 0.9 and the average score of \bar{x} = 1.4. This means that two factors are included in the category not ready and needs a lot of work for the application of e-learning. Improvements need to be made to these two factors so that the implementation of e-learning could be run optimally. The results of this study indicate that the Faculty of Engineering, University of Janabadra Yogyakarta is at the level of "Limited Readiness" for the e-learning implementation.

Acknowledgments

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Conflict of interest

The authors have no conflict of interest directly relevant to the content of this article.

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Figures Legend

Figure 1. Scale rating of Aydin & Tasci ELR models: The measurement scale used refers to the type of Likert scale coded in 1, 2, 3, 4, and 5. Determination of the level of organizational readiness in the implementation of e-learning.

Figure 2. Average e-learning readiness score for Faculty of Engineering: As shown in Table 3, it can be seen that the learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00. Thus, these two factors need to get special attention at the time of the implementation of e-learning.

Figure 3. Graph of ELR score results: As shown in Table 3, it can be seen that the learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00. Thus, these two factors need to get special attention at the time of the implementation of e-learning.

Tables Legend

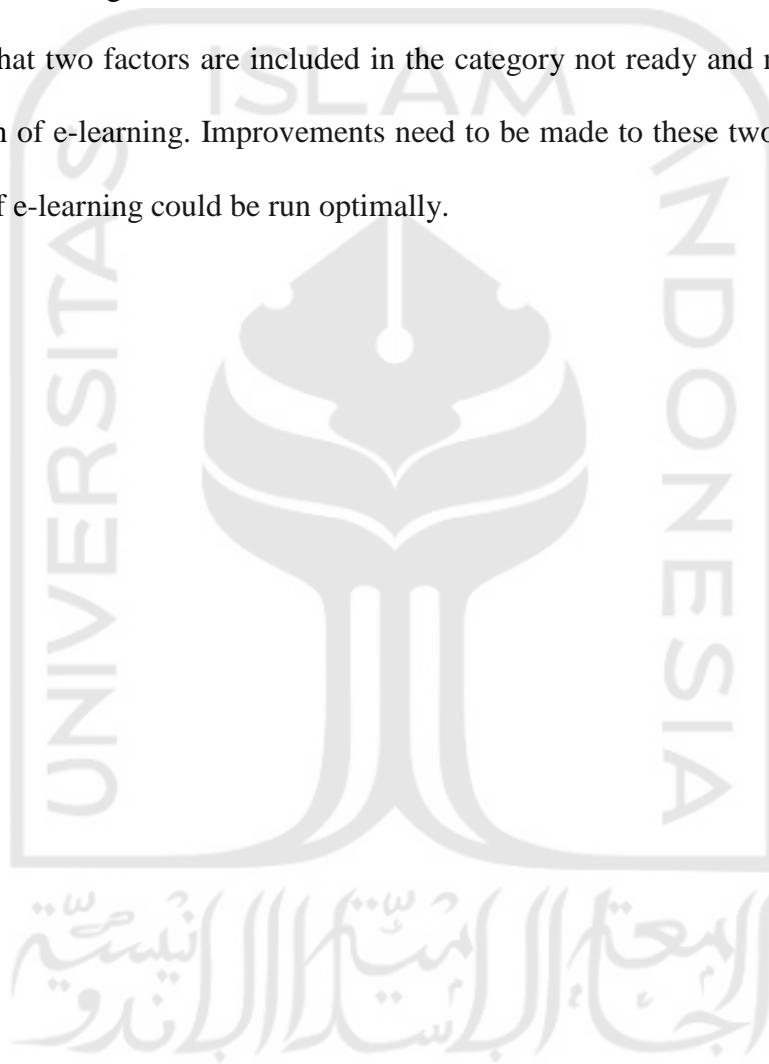
Table 1. Scoring level of e-learning readiness: The concept of analyzing the results of the questionnaire for e-learning readiness is based on the development of the Chapnick and Rosenberg model instruments. Table 1 is the e-learning Readiness Level Scoring. Each condition has a range of scores with detailed scores.

Table 2. Scores of e-learning readiness at the Faculty of Engineering, University of Janabadra Yogyakarta: The results of the questionnaire analysis indicate that the Faculty of Engineering is at the level of "limited readiness" with a score of 70.45 for lecturers; 51.41 for education staff; and 53.30 for students. Table 2 shows the detailed score for each indicator.

Table 3. The average score for each e-learning readiness factor at the Faculty of Engineering, University of Janabadra Yogyakarta: The learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00.

Table 4. Results of distributing questionnaires to Respondents at the Faculty of Engineering, University of Janabadra Yogyakarta: The number of questionnaires that can be processed is only 95 questionnaires from 100 questionnaires that have been distributed. For lecturer respondents who filled out the questionnaire is 4 person, while for the education staff respondents who filled out the questionnaire is 11 and for Student respondents who filled out the questionnaire as many as 80 people.

Table 5. ELR score results: The e-learning readiness (ELR) model applied in this study (1, 2, 3, and 5) provides the results of categories that are ready for e-learning implementation, but require a slight increase in several factors. Improvements need to be made to factors that have a low *ELR* score including organizational culture by obtaining an *ELR* score = 0.8 and the average score of = 2.0. While for financial gain factor achievement score of *ELR* = 0.9 and the average score of = 1.4. This means that two factors are included in the category not ready and needs a lot of work for the application of e-learning. Improvements need to be made to these two factors so that the implementation of e-learning could be run optimally.





Full Length Article

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the lecture process. To be able to improve lectures with e-learning applications, the Faculty must know how the organization is prepared to use e-learning so that it can optimize this e-learning empowerment initiative [11]. The purpose of this research is to measure organizational readiness within implementing e-learning [8], [12, 13].

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n = number of respondents

2. The average score of 3.41 is the minimum score for the level of readiness for the application of e-learning, \bar{x} ELR = 3.41 which means the average score of each question, the average score of the questions for the same factor and the total average score from all questions must be $\bar{x} \geq \bar{x}$ ELR to be considered ready in the application of e-learning [8].

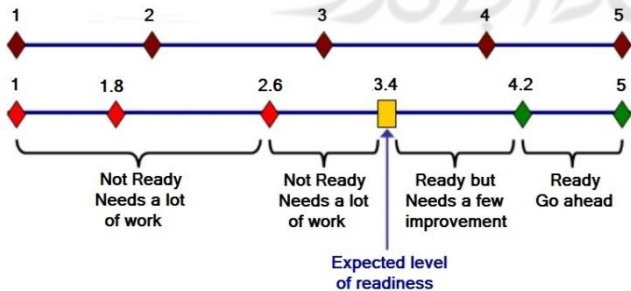


Fig. 1. Scale rating of Aydin & Tasci ELR models

For the range of values and categories described by the measurement scale describes the point scale below [7], [16, 17]:

- 1 – 2,6 = There is no readiness and needs hard work to achieve success.
- 2,7 – 3,4 = Not ready and requires some work to achieve success.
- 3,5 – 4,2 = Ready but still requires a little improvement.
- 4,3 – 5 = really ready for e-learning implementation.

First, the validity and reliability test of the questionnaire was submitted. This validity test was carried out earlier in a study conducted by [3, 4], [9, 10], [14]. The items in the questionnaire that were valid then will be disseminated to the academic components in the Faculty, namely lecturers, final semester students, and educational staff. Respondents were determined to be 10% of the social situation. Surveys will be conducted on people who are seen to know about the social situation [15]. Determination of data sources on the people interviewed was done purposively, which was chosen with certain considerations and objectives. This will be determined later, related to the questions to be compiled. In this study, descriptive hypotheses were not formulated. Statistical techniques for data analysis are done by calculation so Then the formulation of the problem can be answered quantitatively [2], [4], [10]. The descriptive problem formulation is answered through the following steps:

- a) Determine in advance the ideal score/criterion, namely the score determined with the assumption that each respondent in each question gives the answer with the highest score.
- b) Calculating the average score for each question by calculating the average score given by the respondent (a group of respondents).
- c) Calculate the average score for each indicator by calculating the average score for each question in the indicator.
- d) Analyze the results of the average score for each indicator, to determine the level of readiness.

The technique of collecting data is through observation, questionnaires and the views of researchers on the Faculty's social situation. To complement the researchers' insights, literature studies were conducted.

5. Results and Discussion

5.1 Samples and Data Collection Techniques

Respondents in this study were lecturers, final semester students, and educational staff at the Faculty of Engineering Janabadra University Yogyakarta. The number of samples successfully obtained for each group is as follows:

- 1) Lecturers = 7 people
- 2) Students = 80 people
- 3) Educational staff = 12 people

Data collection is done through questionnaire surveys. The data used for research includes initial data that are useful for formulating problems and primary data used to assess the readiness of e-learning [19]. Primary data are taken from the study population through questionnaires for respondents from lecturers, active students and selected educational staff using questionnaire instruments. Sampling for respondents based on criteria with consideration related to the application of e-learning readiness as follows:

- a) Respondents are seen as able to provide clear descriptions and conclusions about the data that the school has.
- b) Respondents are seen as having broad views and knowledge about the data held by the school.
- c) Respondents are seen as competent regarding the implementation of e-learning in schools.

5.2 Analysis of Questionnaire Results

The concept of analyzing the results of the questionnaire for e-learning readiness is based on the development of the Chapnick and Rosenberg model instruments conducted by [2], [8], [18]. Unfortunately, determining the condition of the score obtained is adjusted to the object of the condition of research. To determine the e-learning readiness condition of the research object, the following steps are carried out:

1. Each respondent's answer value is added per each questionnaire for all respondents;
2. Then the total value of each item in the questionnaire is averaged;
3. The total value of the average for all questionnaires is then analyzed based on the e-learning Readiness Level Score table;
4. The table groups the conditions of e-learning readiness into 3 (three) categories, namely (1) There is no readiness; (2) Limited readiness; (3) Readiness has matured.

Table 1 is the e-learning Readiness Level Scoring. Each condition has a range of scores with detailed scores.

Table 1. Scoring level of e-learning readiness

No	Lecturer score	Educational Staff Score	Student Score	Description
1	35 ≤ S < 58	35 ≤ S < 58	32 ≤ S < 53	There is no readiness yet
2	58 ≤ S < 89	58 ≤ S < 89	53 ≤ S < 81	Limited Readiness
3	89 ≤ S ≤ 112	89 ≤ S ≤ 111	81 ≤ S ≤ 102	Readiness has matured

The level of "No readiness" states that there is resistance to the plan for changing learning towards e-learning. The management must concentrate on this management change effort. It even needs to be considered and reviewed, whether e-learning is the right way to achieve organizational goals. The level of "limited readiness" shows that in this condition resistance is not an obstacle, but management still needs to convince all organizational components of the benefits of changes to the e-learning direction.

The "Readiness level is mature" states that the process towards learning changes can be done quickly. This condition is a condition desired by every organization in implementing e-learning. Management has the flexibility and flexibility in determining the change method chosen.

5.3 Analysis Results

The results of the questionnaire analysis indicate that the Faculty of Engineering is at the level of "limited readiness" with a score of 70.45 for lecturers; 51.41 for education staff; and 53.30 for students. Table 2 shows the detailed score for each indicator.

Table 2. Scores of e-learning readiness at the Faculty of Engineering, Univ. of Janabadra, Yogyakarta

Factors	Lecturer score	Educational Staff Score	Student Score
Human Resources	23.75	19.52	20.25
Organizational and Environmental Readiness	15	9.27	10.65
Organizational culture	7.75	9.45	7.45
Finance	5.55	2.93	0
Technology and Supporting Equipment	4.85	4.17	3.35
Learning materials	13.55	6.07	11.6
Total	70.45	51.41	53.3

Furthermore, as shown in Table 3, it can be seen that the learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00. Thus, these two factors need to get special attention at the time of the implementation of e-learning. This condition can be seen more clearly through the graph in Figure 2.

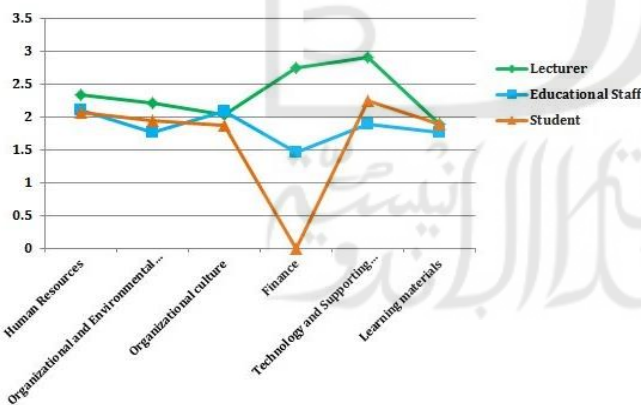


Fig. 2. Average e-learning readiness score for Faculty of Engineering

Table 3. The average score for each e-learning readiness factor at the Faculty of Engineering

Factors	Lecturer	Educational Staff	Student	Average
Human Resources	2.35	2.11	2.08	2.18
Organizational and Environmental Readiness	2.21	1.77	1.94	1.97
Organizational culture	2.04	2.09	1.88	2.00
Finance	2.75	1.47	0	1.41
Technology and Supporting Equipment	2.91	1.89	2.26	2.35
Learning materials	1.9	1.77	1.89	1.85
Average	2.36	1.85	1.68	

As shown in Table 4 below, that is the realization of the distribution of questionnaires for the Respondents.

Table 4. Results of distributing questionnaires to Respondents at the Faculty of Engineering, University of Janabadra, Yogyakarta

Distribution Target	Respondents	Number of Questionnaires
Lecturer	Lecturers who are experts in e-learning	4
Educational Staff	Responsible for the laboratory and several academic staff of the Faculty of Engineering	11
Student	First-year students until 4th year	80
Total		95

The number of questionnaires that can be processed is only 95 questionnaires from 100 questionnaires that have been distributed. For lecturer respondents who filled out the questionnaire is 4 person, while for the education staff respondents who filled out the questionnaire is 11 and for Student respondents who filled out the questionnaire as many as 80 people, that is combined Student in the first year to the fourth year students.

5.4 ELR model Analysis

The recapitulation of the results of filling out the questionnaire by respondents based on the tracking analysis of the scores on each question submitted in accordance with the analysis method using the ELR formula of the model above can be seen in Figure 3 below.

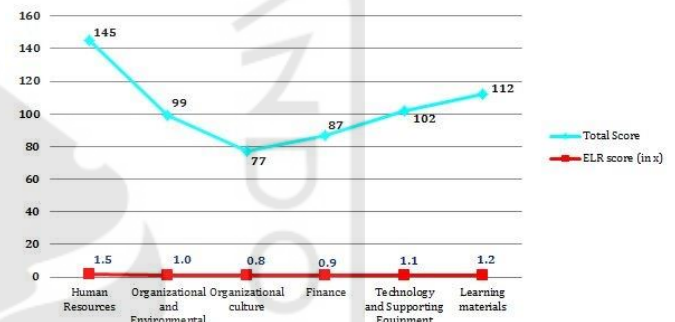


Fig. 3. Graph of ELR score results

Furthermore, the graph shown in Figure 3 is data that has been obtained and then presented based on the data in Table 5 follows.

Table 5. ELR score results

Factors	Total score	ELR Score (in \bar{x})	Categories
Human Resources	145	1.5	Ready, but requires a slight increase
Organizational and Environmental Readiness	99	1.0	Ready, but requires a slight increase
Organizational culture	77	0.8	Not ready, Needs a lot of work
Finance	87	0.9	Not ready, Needs a lot of work
Technology and Supporting Equipment	102	1.1	Ready, but requires a slight increase
Learning materials	112	1.2	Ready, but requires a slight increase
Total	515	5.4	Ready, but needs a few improvement

6. Conclusion

The results of the measurement of e-learning readiness indicate that the Faculty of Engineering, the University of Janabadra Yogyakarta is at the level of "Limited Readiness". Lecturers, students, and educational staff share the same viewpoint. At that level, resistance/rejection of the implementation of e-learning is not visible, but management still needs to convince all components, such as lecturers, students, and educational staff, that implementing e-learning will provide many benefits. Organizational culture and financial readiness factors become things that need to be considered in the preparation of e-learning implementation. This is because the two things have the smallest readiness score. The e-learning readiness (ELR) model applied in this study (1, 2, 3, and 5) provides the results of categories that are ready for e-learning implementation, but require a slight increase in several factors. Improvements need to be made to factors that have a low ELR score including organizational culture by obtaining an ELR \bar{x} score = 0.8 and the average score of \bar{x} = 2.0. While for financial gain factor achievement score of ELR \bar{x} = 0.9 and the average score of \bar{x} = 1.4. This means that two factors are included in the category not ready and needs a lot of work for the application of e-learning. Improvements need to be made to these two factors so that the implementation of e-learning could be run optimally. The results of this study indicate that the Faculty of Engineering, University of Janabadra Yogyakarta is at the level of "Limited Readiness" for the e-learning implementation.

Acknowledgments

The author appreciates the participation of lecturers, educational staff, and students of the Faculty of Engineering, the University of Janabadra Yogyakarta who has contributed to filling out the questionnaire. Thanks to the Dean and all staff of the Faculty of Engineering, the University of Janabadra Yogyakarta. Furthermore, this article is one of the conditions fulfilled in order to obtain a Master of Engineering degree at the Indonesian Islamic University of Yogyakarta. Definitely, this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest

The authors have no conflict of interest directly relevant to the content of this article.

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Highlight:

The main purpose of this study is to measure e-learning readiness from the point of view of students at Faculty of Engineering Janabadra University Yogyakarta Indonesia. A measurement model of e-learning readiness presented by Aydin and Tasci is used to measure the readiness of the organization and their environment; culture readiness; human resources readiness; financial readiness; technology readiness; readiness of learning material.

The e-Learning Readiness (ELR) model applied in this study (1, 2, 3, and 5) provides the results of categories that are ready for e-learning implementation, but require a slight increase in several factors are as follow:

- Improvements need to be made to factors that have a low *ELR* score including organizational culture by obtaining an *ELR* \bar{x} score = 0.8 and the average score of \bar{x} = 2.0.
- While for financial gain factor achievement score of *ELR* \bar{x} = 0.9 and the average score of \bar{x} = 1.4.
- The results of this study indicate that the Faculty of Engineering, University of Janabadra Yogyakarta Indonesia is at the level of "Limited Readiness" for the e-learning implementation.

Applying of the e-learning system evaluation uses the e-learning readiness model: A case study in Janabadra University Yogyakarta

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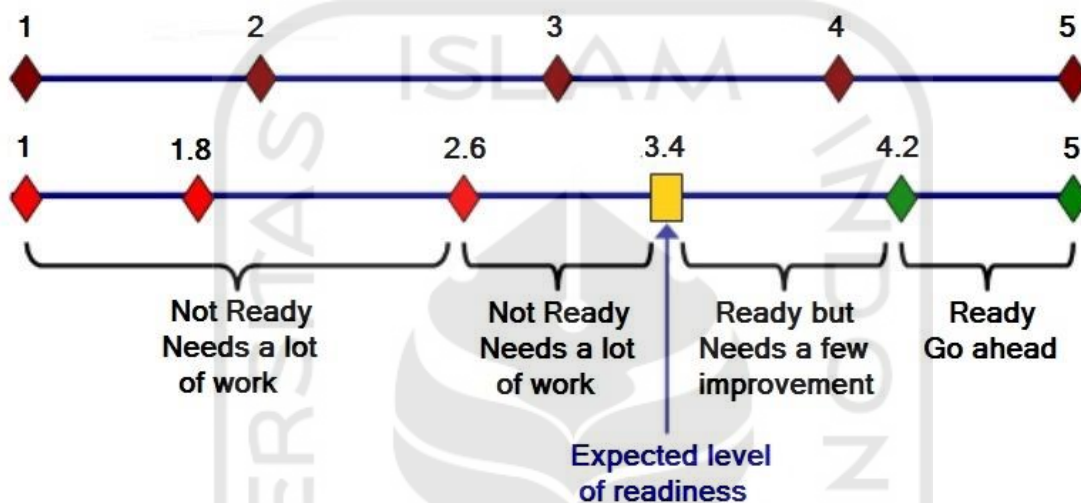


Figure 1. Scale rating of Aydin & Tasci ELR models

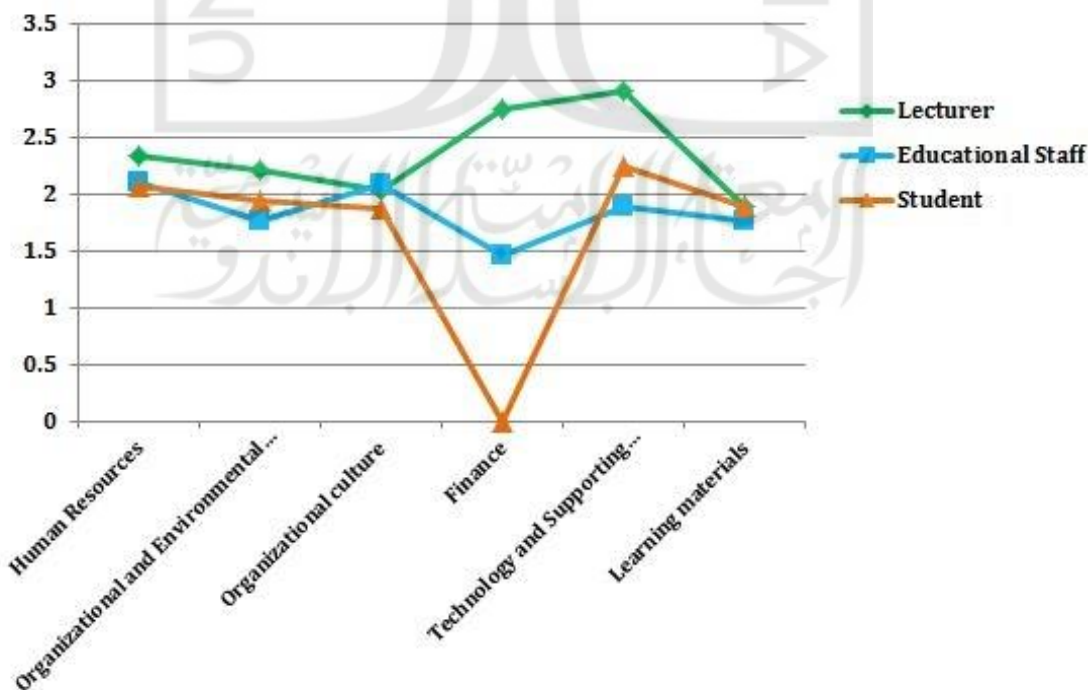


Figure 2. Average e-learning readiness score for Faculty of Engineering

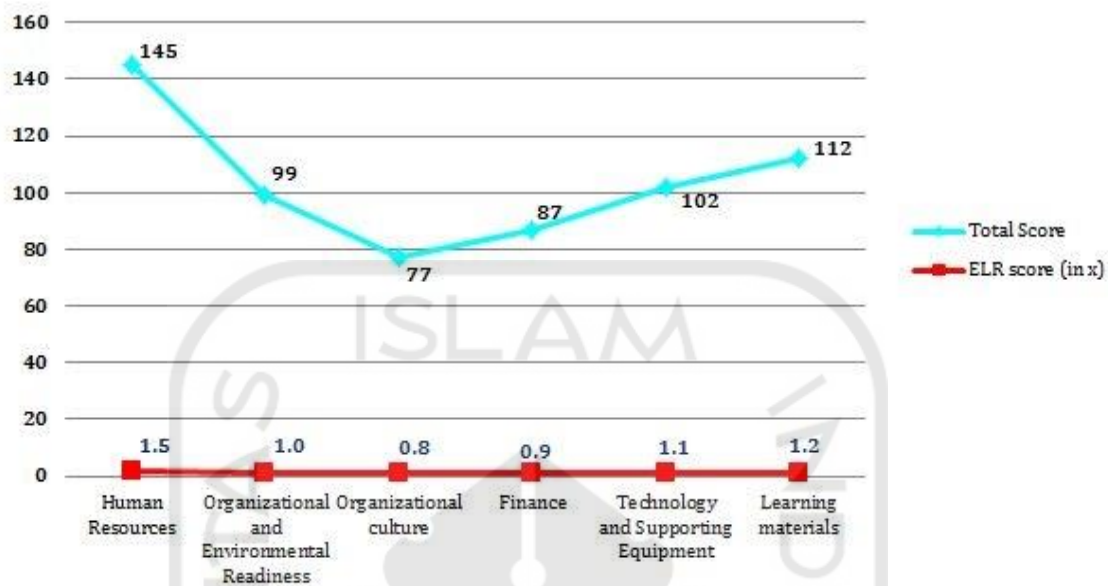


Figure 3. Graph of ELR score results

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2	58 ≤ S < 89	58 ≤ S < 89	53 ≤ S < 81	Limited Readiness
3	89 ≤ S ≤ 112	89 ≤ S ≤ 111	81 ≤ S ≤ 102	Readiness has matured

Table 1. Scoring level of e-learning readiness

Factors	Lecturer score	Educational Staff Score	Student Score
Human Resources	23.75	19.52	20.25
Organizational and Environmental Readiness	15	9.27	10.65
Organizational culture	7.75	9.45	7.45
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Technology and Supporting Equipment	4.85	4.17	3.35
Learning materials	13.55	6.07	11.6
Total	70.45	51.41	53.3

Table 2. Scores of e-learning readiness at the Faculty of Engineering, University of Janabadra Yogyakarta

Factors	Lecturer	Educational Staff	Student	Average
Human Resources	2.35	2.11	2.08	2.18
Organizational and Environmental Readiness	2.21	1.77	1.94	1.97
Organizational culture	2.04	2.09	1.88	2.00
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Learning materials	1.9	1.77	1.89	1.85
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Table 3. The average score for each e-learning readiness factor at the Faculty of Engineering, University of Janabadra Yogyakarta

Distribution Target	Respondents	Number of Questionnaires
Lecturer	Lecturers who are experts in e-learning	4
Educational Staff	Responsible for the laboratory and several academic staff of the Faculty of Engineering	11
Student	First-year students until 4th year	80
Total		95

Table 4. Results of distributing questionnaires to Respondents at the Faculty of Engineering, University of Janabadra Yogyakarta.

Factors	Total score	ELR Score (in x)	Categories
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Learning materials	112	1.2	ready, but requires a slight increase
Total	515	5.4	ready

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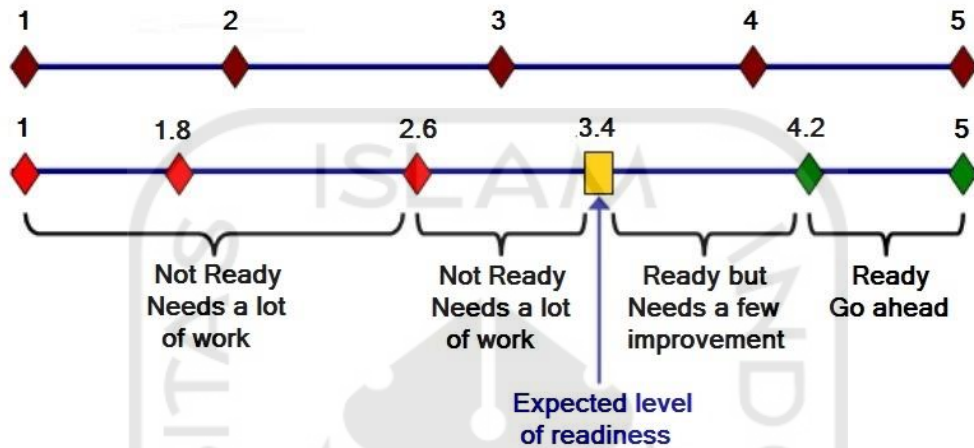


Figure 1. Scale rating of Aydin & Tasci ELR models

The measurement scale used refers to the type of Likert scale coded in 1, 2, 3, 4, and 5. Determination of the level of organizational readiness in the implementation of e-learning is based on the results of the research conducted by [1], [5], [7, 8].

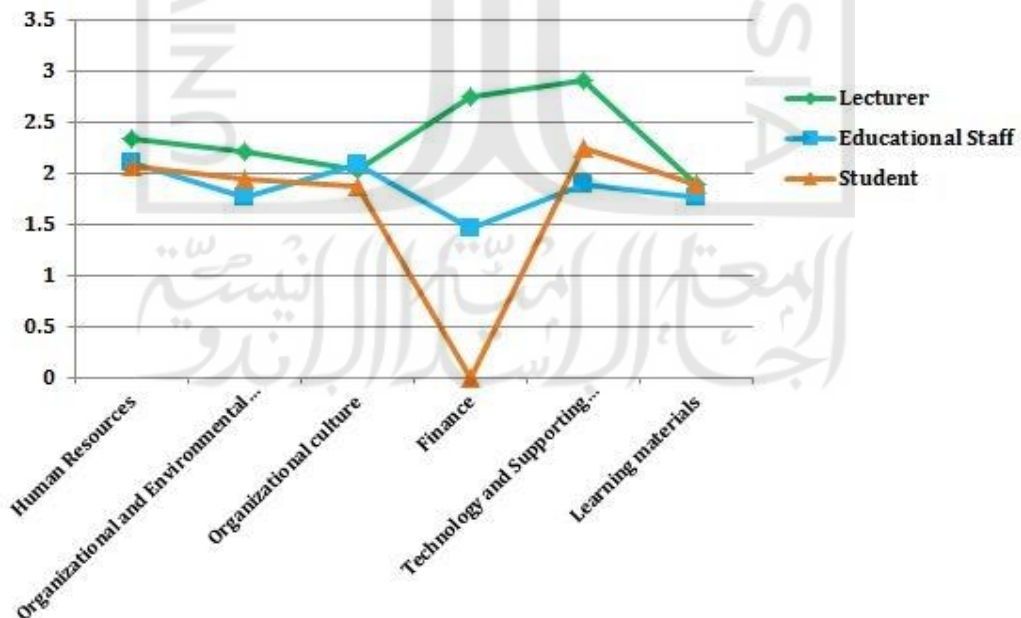


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As shown in Table 3, it can be seen that the learning material readiness and finance factors have the lowest average score, which is 1.85 and 1.41. Both of these factors have an average score of less than 2.00. Thus, these two factors need to get special attention at the time of the implementation of e-learning.

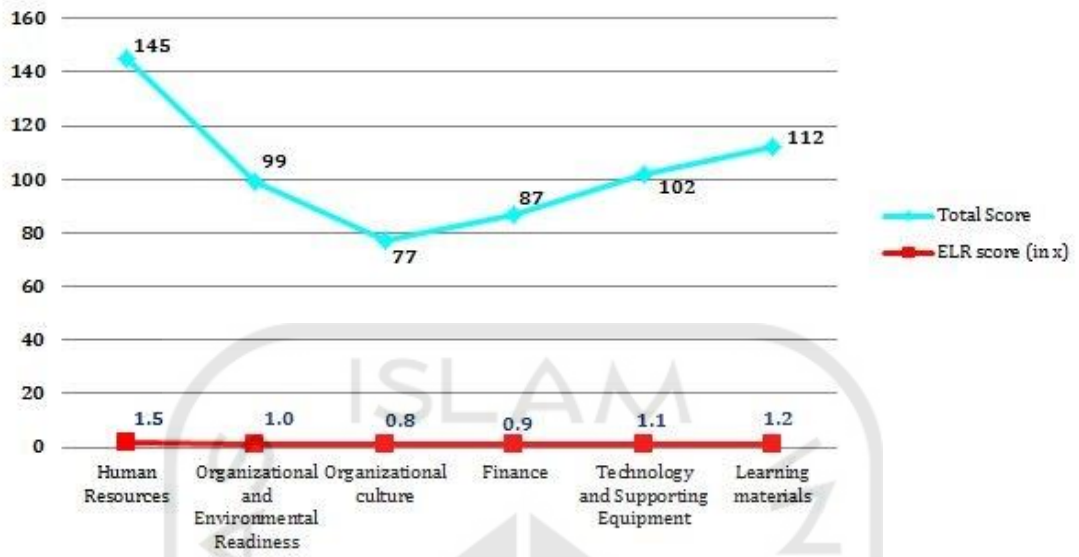


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