

# Relationship of Self-Efficacy and Obstacles of E-Learning Towards Online Method in Ir4.0

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## Abstract

In IR4.0 situation, online method and e-learning been considered as a part to be implemented. Self-efficacy and obstacles in e-learning are the elements to be concerned in the learning process. The ultimate objective of this research is to identify self-efficacy and obstacles in e-learning experienced by students. Further, this research determines the relationships among self-efficacy and obstacles in e-learning. There are 202 students in year 2 and year 3 in Faculty of Technology Management and Business (FPTP) were chosen as respondents of this study. Self-efficacy refers to how confident an individual feels about handling particular tasks, challenges and context given by the lecturer. Obstacles were defined as the resistance faced by students that bringing negative effects to them in using e-how. This research used questionnaires and quantitative methods for data collection method. The relationships among self-efficacy in e-learning and obstacles in e-learning is very weak. This research has been carried out to accomplish the objectives set by the researchers to identify the self-efficacy in using e-learning and obstacles in e-learning. The findings show that the students have e-learning self-efficacy (mean= 3.8201). Four elements of obstacles (factors) emerged, that include personality, organization, situational and technological obstacles. Organizational obstacles were the most prevalent (mean= 3.3020), followed by personality obstacles (mean= 3.2855), and situation obstacles (mean= 3.281). Technology obstacles (mean= 2.7723) were the least common. To conclude the research for identifying the relationship between self-efficacy and obstacles in e-learning experience, one hypothesis was tested and accepted.

## Introduction

Educational institutions play a big role in developing and educating the human to meet goals and aspirations of national education philosophy. Its main goal is the community that is knowledgeable and ethical could develop the country further. In line with the current developments and current situation of pandemic Covid-19, e-learning methods are being widely implemented. In terms of information and communication technology, there are varieties of the latest hardware and software produced. E-Learning is a method using the latest applications to enhance learning practice. E-learning is teaching and learning using electronic networks to deliver content, information and also interact through it. E-Learning can be identified as a learning environment using electronic technology to involve and access the educational curriculum outside of the traditional classroom (Corgosinho et al., 2020; Harris, 2017). The elements of the e-learning process are primarily internet-centered; global learning partnerships and resources. The release of information and the flow of knowledge through networked courses, and the flexibility of learning is made to overcome the problem of distance and time (Liu & Wang, 2009; Tolić, 2020). This online method plays big role in the current IR4.0 situation.

Some of the advantages of e-learning are classroom work that can be set and change anytime based on personal and professional work, resulting in flexible learning concept. Next, students may have the option to select learning materials that meet their level of knowledge and interests (Kikulwe & Asindu, 2020). The flexibility can also be arranged by the users. Pollard and Hillage (2011) said, not everyone enjoys the advantages of e-learning. There are some obstacles while using e-learning, including personality, situation, learning style, instruction, technology, and organization. Additionally, the self-efficacy of graduates of e-learning will affect the use of e-learning. The self-efficiency of graduates towards e-learning is the willingness and confidence to use it. A graduate who has high self-efficiency using e-learning faces fewer obstacles while using it (Delbianco & Dabús, 2020; Mungania & Hatcher, 2004).

In the implementation of teaching and learning with e-learning, many people state the weaknesses and deficiencies. According to Urdan and Weggen (2000), although there are some parties who are working hard on developing e-learning, but only a few parts of the evidence supports the effectiveness of e-learning. Therefore, this research is very necessary to know self-efficiency by using e-learning, obstacles in using e-learning and the relationship between self-efficiency and obstacles of using e-learning towards Technology Management and Business (FPTP) students. There are few obstacles in this e-learning such as is being said before. Among them are technological obstacles which many students do not have their own internet access. The Internet that is provided by the university sometimes cannot accommodate internet access required by all students. Next, the level of consistent access to the internet is not good because sometimes the internet connection can be disconnected while we are in the middle of e-learning as a result of too much access at the same time. This often occurs for students in all universities. So, to understand more about this study, a qualitative study which is a questionnaire method being



conducted. Therefore, 3 main objectives been identified which are: (i) To identify self-efficacy of using e-learning towards FPTP students, (ii) To determine obstacles in using e-learning towards FPTP students and (iii) To explain the relationship between the self-efficacy and obstacles of using e-learning towards FPTP students.

## Literature Review

A literature review includes the discussion and highlights which covers the main aspects like the studies that have been carried out in connection with e-learning, the meaning of e-learning, e-learning effectiveness, category e-learning, social learning theory, the obstacles the use of e-learning and e-learning for students FPTP.

### E-Learning Characteristics

E-Learning has few interpretations, but normally this means learning electronically. This is learning environment not directly from lecture notes, books or faces from the teacher. Common platform are computer-based training and web-based lessons or online lessons. With the advance of technology, lessons can be practice anytime and anywhere. E-learning can be further categorized into formal, structured, and informal lessons such as discussions, emails and other methods. Much is discussed about lifelong learning through e-learning covering both types of learning to help solve performance problems. E-learning has been defined in many ways. Delivery of learning, training or education programs by using electronic platforms. E-learning involves the use of computers or electronic devices such as smartphones and laptops in some way to provide training, education or learning materials (Stockley, 2013). The key to effective e-learning is with a variety of content. Pictures, sounds, and text can be used together to develop memory, in some parts of the brain, and therefore produce lessons storing material in memory. E-learning to build engaging interactions. Games, quizzes, and manipulation of on-screen objects are needed to generate more interest and also make it possible to follow lessons. E-learning provides instant feedback. The e-learning course is accompanied by immediate feedback to correct or clarify things misunderstood by students. Immediate feedback is more effective because each level of learning depends on the previous level of learning. If no response is given, the next step in the learning problem will be based on misunderstood information. E-learning encourages interaction with other e-educators and e-students. Chat rooms, discussion boards, instant messaging, email are there to provide effective interaction to students. E-learning is also very effective in replacing discussions in the classroom.

### E-Learning Effectiveness

E-learning made learning scenarios more efficient and effective in many aspects. There are few advantages of e-learning such as the areas of usability, cost-effectiveness, content, and flexibility. Areas of use mean users can access materials whenever they want, wherever they like in terms of time and also in informal situations. There are few ways to access E-learning either online or offline, hardcopy or softcopy to build materials. Students can use e-learning to learn something anytime and anywhere they are. Advantages of Just-In-Time (JIT) opportunities to learn new things for people who are unable to meet their daily schedule in education. In addition, e-learning programs are based on students' abilities. A large number of e-learning programs can be taken only when needed. Content organized in "books" in virtual e-learning software produces a module-based design that allows students to learn something in small observable sections in depth before moving on to the next topic.

Cost effective means there are many materials that consumers can access without incurring expensive costs. There are also free resources from the internet that provide many benefits to users for the purpose of e-learning as well as other fields. This is different from the traditional way where it is more expensive to buy books, journals and so on. In addition, the biggest benefit offered to students is increasing flexibility. When courses are offered online, students are often able to access lectures and other course materials according to their own schedules.

## Differences between Traditional Learning and E-Learning

In any form of learning, its success depends on the efforts of educators as well as students. In the traditional classroom, teachers are treated as Frock on stage. The teacher is considered to be the person omniscient and assigned to channel his knowledge to his students. In learning e-learning focused primarily on students. Students need to stand on their feet at certain times and are responsible for the new school. E-learning environment will force students to play a more active role in his studies. Students plan and find materials or information efforts, and their own initiatives.

### Self-Efficacy in E-Learning

Self-efficacy refers to how confident a person feels in dealing with specific tasks, challenges and contexts given by a lecturer (Hornung, 2020; Kinicki & Kreitner, 2012). Self-efficacy, according to Bandura (2006), "emphasizes people's trust in their ability to produce a particular achievement" (p. 307). Levels of self-efficacy are typically considered to have strong validity for a particular task domain, and most findings suggest that self-efficacy is positively related to student performance. People with a strong sense of self-efficacy will think of difficulty in a situation as a challenge to be encountered, set challenging goals and maintain a strong commitment to achieve. It helps people to develop a deeper interest and involvement in activities, enhance and defend their efforts in moments of resistance and adversity, and recover more quickly from disappointments, setbacks and failures. On the other hand, people with low self-efficacy tend to run away from difficult tasks (see them as a personal threat), have low aspirations and weak commitment to the goals they have set, think of self-weaknesses or problems felt when experiencing difficulties, more slow to recover from disappointment, setback or failure. Self-efficacy can be developed through personal experience, when an individual successfully completes or achieves his or her goals. This is reinforced because individuals experience more frequent success when researching the same or similar tasks. Conversely, failure to complete a particular task can result in lower self-efficacy (Eastin & LaRose, 2000; Garland, 1993; Pratap, 2020).

### Obstacles in E-Learning

The purpose of this research was to study about the existence of barriers in e-learning, preparing for the future of e-learning and reducing e-learning barriers. Review and understand the barriers in e-learning to play a role in future user retention of e-learning. Therefore, the results of this study will lead to the knowledge of the general public through the attention of people who focus on problems in e-learning, then only be able to obtain a positive return on investment in e-learning. This study examines the barriers faced by students in the use of e-learning. Barriers are defined as barriers faced by students that will negatively impact them in using e-learning. E-Learning barriers have been found that influence individuals in learning situations and satisfaction (Giles, 1999; Schilke & Cook, 2013).

## Research Methodology

Research methodology is important to ensure research is conducted in an orderly and smooth manner for contributing to the successful to obtain the data required to do this research. Research methodology is referring to the process of implementing the study. The methodology includes a few things, namely, design research, population studies, samples, depth of research, instruments used, procedures for conducting research, collecting data and how to analyse the data.

## Research Design

The study was conducted by using the questionnaire method. The survey was a simple method, that is, the sample provided a tool for complete information and then information was processed in accordance with the method of analysis planned by the researcher. Survey method in the study of e-learning involves information gathering activities of the students in year 2 and year 3 of FPTP only. A total of 202 graduates were selected as the sample for this study. Instruments used for obtaining data from a sample is through a questionnaire. A descriptive study is used because it involves a process of information, observation and analysis to explain the situation and

relationships between variables to peel deeper problems nowadays. Through this study also, description and information about a situation at a given time can be described as well as to explain the planning of the future. Planning procedure of the studies was planned so that research can be carried out based on systematic measures. The steps to be performed are such as to identify the problems encountered, the statement of the problem, study design, data collection, analysis and interpretation of data and finally write a research report in question. Sampling is the strategic research where researchers can get information about a population from some individuals to the population. Some individuals are retrieved through sampling to represent a particular population surveyed named samples. The information obtained from the sample can be used to estimate the information on the population studied. Based on the sample, researchers can estimate the population parameters such as mean, variance and standard deviation.

## Results and Discussion

### Reliability Analysis

#### Pre-Test Reliability for IV and DV

Researcher has conducted a pre-test by distributing 15 sets of questionnaires of survey to a few students' year 2 and 3 in FPTP. The findings results are based in table 1 below:

**Table 1**  
Reliability test for Pre-Test

Section	Independent Variable	Alpha Cronbach	Number of Question	Number of Respondent	Result
B	Self-Efficacy	0.709	15	15	Acceptable
C	Obstacles	0.727	15	15	Acceptable

#### Reliability Analysis for Actual Study

For this research, there are 202 number of respondents. The analysis result is shown in table 2.

**Table 2**  
Reliability test for Actual Study

Section	Independent Variable	Alpha Cronbach	Number of Question	Number of Respondent	Result
B	Self-Efficacy	0.705	15	202	Acceptable
C	Obstacles	0.812	15	202	Good

### Descriptive Analysis

#### Descriptive Analysis for Self-Efficacy

Refer to Table 4, mean self-efficacy of e-learning have been set out for each question, from item 1 to item 15. There is a code of 1 to 5 for items about personal efficiency using e-learning, code 5 for "strongly satisfied (SS)", code 4 for "satisfied (S)", code 3 to "neither" (N), code 2 to "dissatisfied (D)" and 1 for "strongly dissatisfied (SD)".

From the observation, there are four items with moderate levels with the mean value are 3.57, 3.59, 3.52, and 3.30 respectively. The mean shows that some of the respondents were neither with these four items. Based on the results, the overall self-efficacy items achieve a moderate mean score. The total mean for self-efficacy is 3.8201. The use of computers makes learning easier, with the highest mean 4.3069. Followed by the items used in the internet to collect data recorded a mean of 4.0891 and items related to the internet with mean 4.0693. This shows the efficiency of the students is high. Students have high confidence about their ability to use e-learning.

**Table 5**  
Descriptive Analysis for Self-Efficacy

No	Self-Efficacy	Mean	Standard Deviation	Level
1.	I understand things related to the internet.	4.0693	0.83764	High
2.	I have appropriate skills to use the e-learning software.	3.8267	0.76923	High
3.	I can use the internet to collect data.	4.0891	0.78034	High
4.	I can solve the problem related to the internet	3.7426	0.90497	High
5.	I'm going to have problems with most of the software I have ever tried.	3.5743	0.83870	Moderate
6.	The computer allows me to be more productive.	3.9554	0.89387	High
7.	The use of computers makes learning become easier.	4.3069	3.67523	High
8.	Part of computer software makes the learning process easier.	3.9307	0.84356	High
9.	The term computer confuses me.	3.5941	0.92697	Moderate
10.	Computers help me save time.	4.0644	0.79226	High
11.	I was able to deal with difficult problems that are difficult when learning online.	3.7426	0.74851	High
12.	I am full of confidence with my abilities while using computers for learning.	3.7871	0.77217	High
13.	I often run into problems when trying to use the computer.	3.5198	0.98350	Moderate
14.	I felt the use of computers was misleading me.	3.3020	1.00392	Moderate
15.	I will ensure that learning new software is easy for me.	3.8564	0.77536	High
<b>Average Mean Score</b>		3.8201		High

### Obstacles Descriptive Analysis

These items are a combination of items to situation obstacles, learning styles obstacles, personality obstacles, instructions obstacles and technological organization obstacles. There is a code of 1 to 5 for each item on the obstacles in learning, code 5 for "no obstacles", code 4 for "slight obstacles", code 3 for "moderate obstacles", code 2 for "strong obstacles" and the code 1 for "very strong obstacles". Code 5 means consider the item as a major obstacle, while on the other hand assume code 1 the item is not an obstacle. Items in table 4.16 recorded higher obstacles which are the first to the fifth is "Less confidence in terms of the ability to engaging in e-learning "(3.4950)," time management factor" (3.4406)," E-learning is not suitable with my learning styles"(3.4307)," E-learning is less interacting with each other "(3.3713) and" too busy with other work "(3.2129). Overall, the obstacles to the use of e-learning are at a moderate level of obstruction. The overall mean average was 3.1901. This shows the obstacles still exist and the steps to be taken to overcome such obstacles. Personality obstacles refers to the perception of the existence of obstacles caused by graduate self and graduate towards e-learning. The personality obstacles also refer to the obstacles personal graduate. Table 7 shows items for personality obstacles.

Refer to table 7, all items noted moderate levels of obstacles. Items that recorded the highest mean value were less confident in terms of the ability to engage in e-learning with the value of 3.4950. Learning style obstacles refers to the comfort of the graduate of technology and adapt e-learning as a new school style. Learning styles are categorized under personality obstacles. Table 8 shows items for learning styles obstacles. Both items learning style obstacles are indicated at a moderate level. E-learning is not suitable with my learning styles. The mean is 3.4307 and e-learning is less interacting with each other shows the mean 3.3713.

### Descriptive Analysis for Instruction Obstacles

The instructions obstacles refer to online teaching materials, teaching design and teaching materials. Instruction's obstacles categorized in institutional obstacles. Table 9 indicates items to instructions obstacles.



**Table 6**  
Descriptive Analysis for Obstacles

No.	Obstacles	Mean	Standard Deviation	Level
1.	Too busy with other work.	3.2129	1.14572	Moderate
2.	E-learning is not suitable with my learning styles.	3.4307	1.03551	Moderate
3.	E-learning is less about interacting with each other.	3.3713	0.98029	Moderate
4.	Less confidence in terms of the ability to engage in e-learning.	3.4950	3.00290	Moderate
5.	Weak in communication skills online (e.g the use of e-mail and corner discussion)	3.1782	1.06408	Moderate
6.	Time management factor	3.4406	0.95622	Moderate
7.	Interference from other works and places of learning.	3.1436	0.92192	Moderate
8.	Psychological factors such as anxiety and stress while using e-learning.	3.1832	0.98300	Moderate
9.	The period of getting feedback from instructors in e-learning.	3.0891	1.04238	Moderate
10.	Very slow internet network.	2.6683	1.33602	Moderate
11.	Instruction and explanation from the instructor in e-learning is not clear	2.9851	1.03893	Moderate
12.	Level of informational learning information in e-learning.	3.1485	1.00135	Moderate
13.	Lack of time to learn online.	3.3267	0.93158	Moderate
14.	Lack of skills and familiarity with e-learning technology.	3.3020	0.92661	Moderate
15.	High costs in hardware, software, repair, or service computers.	2.8762	1.24570	Moderate
	<b>Average Mean Score</b>	3.1901		Moderate

### Personality Obstacles Descriptive Analysis

**Table 7**  
Descriptive Analysis for Personality Obstacles

No.	Personality Obstacles	Mean	Standard Deviation	Level
1.	Less confidence in terms of the ability to engage in e-learning.	3.4950	3.00290	Moderate
2.	Weak in communication skills online (e.g the use of e-mail and corner discussion)	3.1782	1.06408	Moderate
3.	Psychological factors such as anxiety and stress while using e-learning.	3.1832	0.98300	Moderate
	<b>Average Mean Score</b>	3.2855		Moderate

### Descriptive Analysis for Learning Style Obstacles

**Table 8**  
Descriptive Analysis for Learning Style Obstacles

No.	Learning Style Obstacles	Mean	Standard Deviation	Level
1.	E-learning is not suitable with my learning styles.	3.4307	1.03551	Moderate
2.	E-learning is less about interacting with each other.	3.3713	0.98029	Moderate
	<b>Average Mean Score</b>	3.401		Moderate

**Table 9**  
Descriptive Analysis for Instruction Obstacles

No.	Instruction Obstacles	Mean	Standard Deviation	Level
1.	The period of getting feedback from instructors in e-learning.	3.0891	1.04238	Moderate
2.	Instruction and explanation from the instructor in e-learning is not clear	2.9851	1.03893	Moderate
3.	Level of informational learning information in e-learning.	3.1485	1.00135	Moderate
	<b>Average Mean Score</b>	3.0742		Moderate

Items to restrictions instructions noted obstacles at a moderate level. Information quality level learning in e-learning recorded the highest 3.1485 while instructions and explanations from the instructor in e-learning are not clear recorded the lower mean 2.9851.

### Descriptive Analysis for Organizational Obstacles

Organizational obstacles are caused by the student or organization. Organizational obstacles are categorized under institutional obstacles. Table 10 refers to items involved in organizational obstacles. Only one obstacle available in this organization, which is lack of skills and familiarity with e-learning technology with a mean of 3.3020.

**Table 10**  
Descriptive Analysis for Organizational Obstacles

No.	Organizational Obstacles	Mean	Standard Deviation	Level
1.	Lack of skills and familiarity with e-learning technology.	3.3020	0.92661	Moderate
	<b>Average Mean Score</b>	3.3020		Moderate

### Technological Obstacles Descriptive Analysis

Technological obstacles refer to learning technology. Table 11 shows the items to technological obstacles. Items to technological obstacles noted the obstacles at a moderate level. The highest mean value of 2.8762 is high costs in hardware, software, maintenance, or service computers. This means high costs in hardware, software, repair, or service the computer has become an obstacle to the respondent in the use of e-learning. Situation obstacles refer to a situation where there are going to be obstacles to graduate to use e-learning. Table 12 shows items for obstacle situation. Items to the situation obstacles noted obstacles at a moderate level. Items time management factor recorded the highest mean value which is 3.4406.

### Analysis of Normality

Normality test was used to identify whether parametric tests could be used or not. Normal data refer to data that are drawn from a normally distributed population (Sekaran & Bougie, 2019). According to Ghasemi and Zahediasl (2012), there are several tests that can be used to determine normality such as the Kolmogorov-Smirnov test, Shapiro-Wilk test, Cramer-von Mises test and Anderson-Darling test. However, the Kolmogorov - Smirnov test is the most commonly used test. If the data is normally distributed, a parametric test will be conducted using Pearson correlation test. Kolmogorov - Smirnov test as shown in table 13 and 14. Table analysis indicates that all the significant values of self-efficacy and obstacles in e-learning, P values <0.05. Therefore, this research is not normally distributed. Hence, Spearman's correlation test was used in order to achieve the objective of this study.



**Table 11**  
Descriptive Analysis for Technological Obstacles

No.	Technological Obstacles	Mean	Standard Deviation	Level
1.	Very slow internet network.	2.6683	1.33602	Moderate
2.	High costs in hardware, software, repair, or service computers.	2.8762	1.24570	Moderate
<b>Average Mean Score</b>		2.7723		Moderate

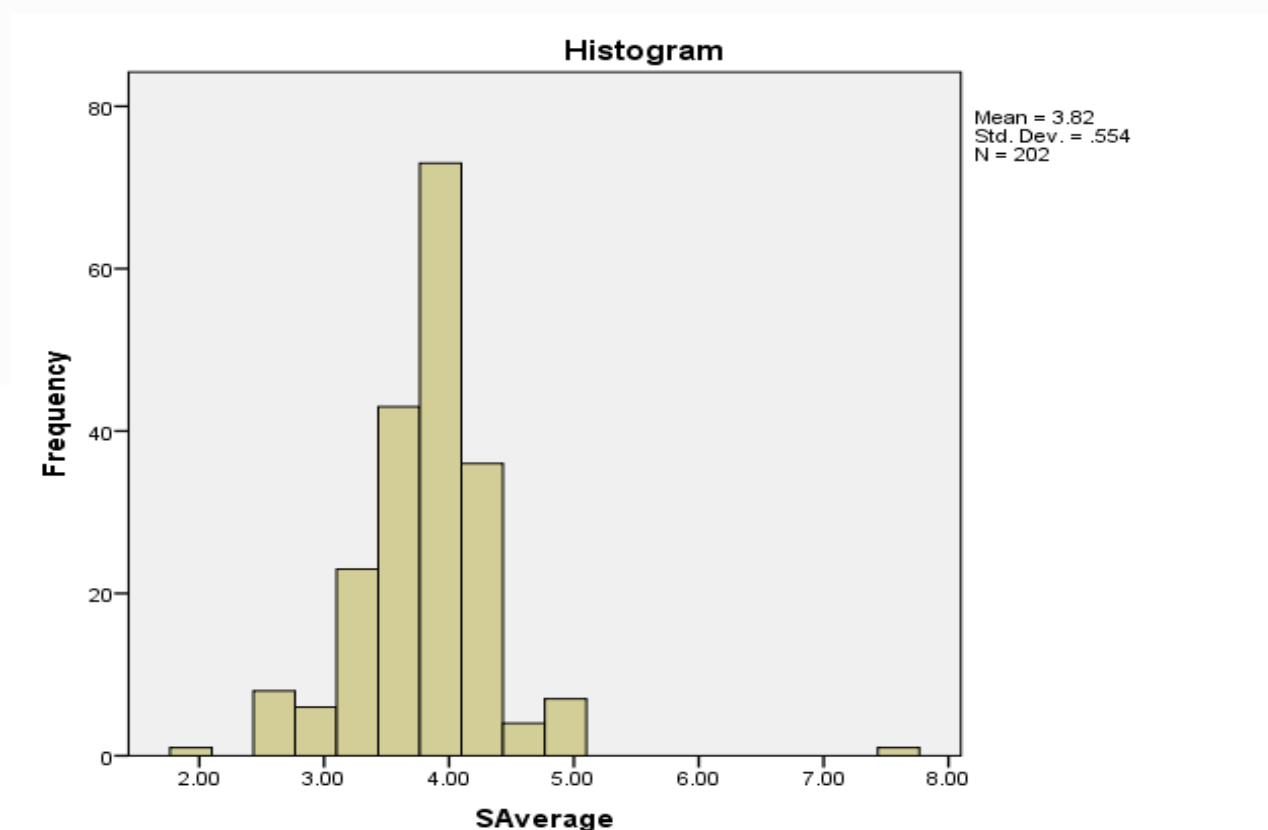
**Situation Obstacles Descriptive Analysis**

**Table 12**  
Descriptive Analysis for Situational Obstacles

No.	Situational Obstacles	Mean	Standard Deviation	Level
1.	Too busy with other work.	3.2129	1.14572	Moderate
2.	Time management factor	3.4406	0.95622	Moderate
3.	Interference from other works and places of learning.	3.1436	0.92192	Moderate
4.	Lack of time to learn online.	3.3267	0.93158	Moderate
<b>Average Mean Score</b>		3.281		Moderate

**Table 13**  
Normality Test Independent Variable

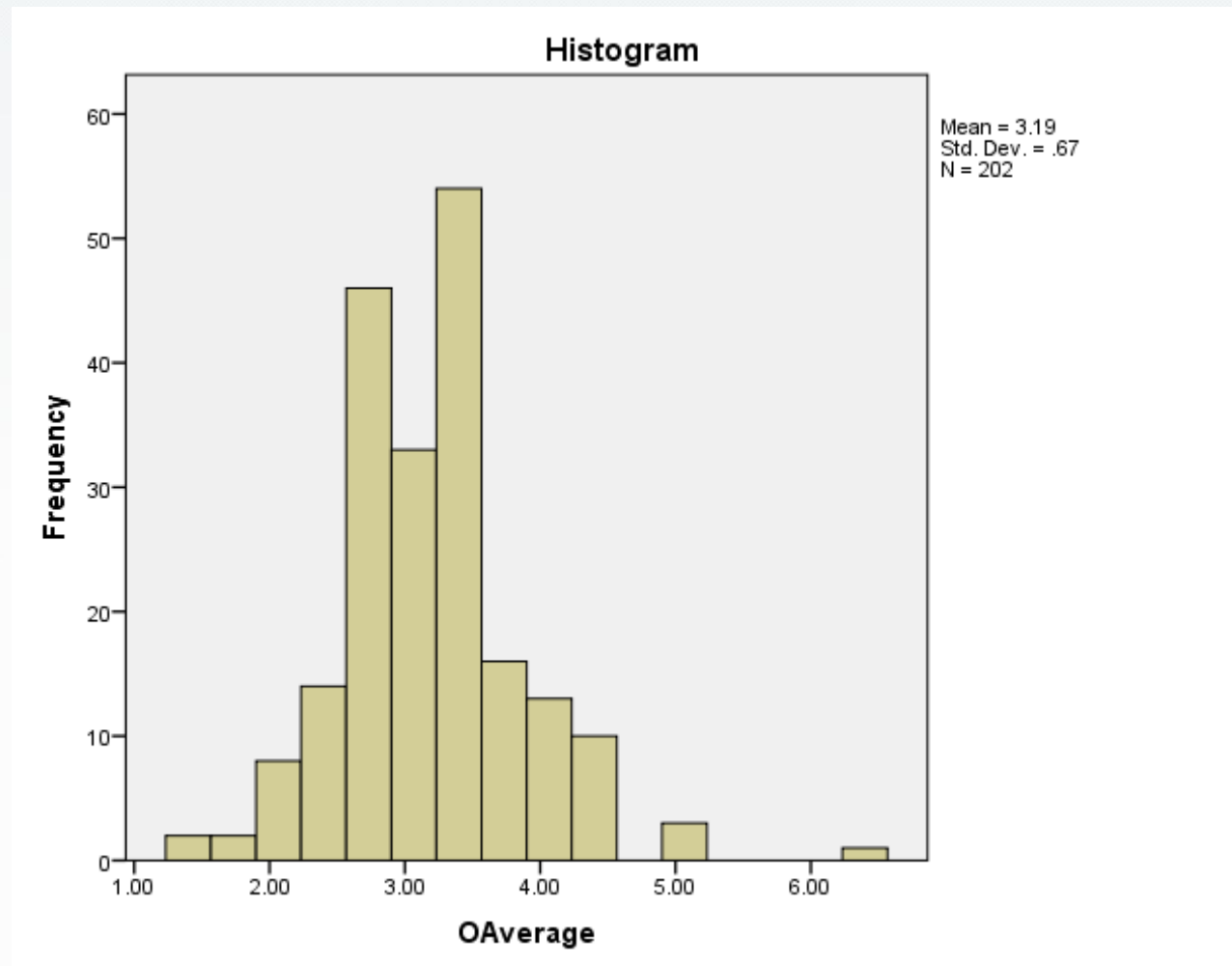
	Kolmogorov-Smirnov <sup>a</sup>		
	Statistic	Df	Significance
Self-efficacy	0.110	202	0.000



**Figure 1:** Normality Graph Independent Variable

**Table 14**  
Normality Test Dependent Variable

	Kolmogorov-Smirnov <sup>a</sup>		
	Statistic	Df	Significance
Obstacles	0.102	202	0.000

**Figure 2:** Normality Graph Dependent Variable

## Correlation

### Correlation between Self-Efficacy and Obstacles in E-Learning

$H_0$  = There is no relationship between self-efficacy and obstacles in e-learning.

$H_1$  = There is a relationship between self-efficacy and obstacles in e-learning.

**Table 16**  
Correlation between Self-Efficacy and Obstacles in E-Learning

			Obstacles
Spearman's rho	Self-efficacy	Correlation Coefficient	0.186
		Sig. (2-tailed)	0.008

From table 16, the significance value of self-efficacy towards obstacles recorded was  $0.000 < 0.05$ . Hence,  $H_0$  was rejected. There is a statistically significant correlation between the self-efficacy and obstacles in e-learning. The value of Spearman's rho correlation coefficient is 0.186(1.86%). The correlation coefficient shows that there is a very weak relationship between self-efficacy and obstacles in e-learning.

## Conclusion

The research was conducted by explaining a few hypotheses testing to accomplish the research objectives. In this research, there is one hypothesis being tested using Spearman's rho correlation test. Table 17 shows the summary of the hypothesis testing.

**Table 17**  
Hypothesis Testing

Hypothesis	Spearman's Correlation	rho	Result
<b>Hypothesis 1:</b> There is a significant impact of self-efficacy and obstacles in using e-learning.	0.186		Accepted

This research shows the correlation coefficient for the obstacles in the use of e-learning and self-efficacy of e-learning variables is very weak with the value 0.186 which is the value within 0.01 to 0.30. Overall, the findings about the obstacles in the use of e-learning is at a moderate level of abstraction with mean 3.1901. The study of the self-efficacy of the students against the use of e-learning recorded a mean 3.8201. This has been supported by the opinion of Mallya, Lakshminarayanan, and Payini (2019) which states that users who have a high level of efficiency will experience less experienced obstacles while using e-learning. The research also clearly showed the existence of an association of significant variables between obstacles in the use of e-learning and self-efficacy of e-learning where the value of significance is 0.008 smaller from the significant level that is set at 0.05 test correlation into two tailed ( $0.008 < 0.05$ ). The first objective for this research is to see the extent of self-efficacy in e-learning among students. The results for the extent level are at a moderate level which is the mean are 3.8201. Second objective, extent level of obstacles in e-learning among students. The extent level for obstacles is at a moderate level with mean 3.1902. The last objective is to examine the relationship between the self-efficacy and obstacles of using e-learning towards FPTP students. The correlation coefficient shows that there is a very weak relationship between self-efficacy and obstacles in e-learning. Overall, the objectives of this project have been achieved.

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