Alghatani and Almanafi (2021). Student Performance Determinants on English Subject During Covid-19 Pandemic by Using the E-Learning Platform. International Journal of Business Society, 5 (10), 443-449

Journal Homepage: www.ijo-bs.com

International Journal of Business Society

Contents lists available at: https://www.ijo-bs.com/issue.html

STUDENT PERFORMANCE DETERMINANTS ON ENGLISH SUBJECT DURING COVID-19 PANDEMIC BY USING THE E-LEARNING PLATFORM

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Information of Article

Article history:
Received: 25 Sep 2021
Revised: 25 Sep 2021
Accepted: 5 Oct 2021
Available online: 6 Oct 2021

Keywords:
Online Services
Acceptance of E-learning
Student Performance

ABSTRACT

E-learning is one of the most critical learning environments in the information era. Therefore, efforts and experiences related to this type of learning are given due attention around the world. This study aims to determine the impact of online services and the acceptance of e-learning on student performance during the pandemic of COVID-19 using e-learning platforms. This research will provide a comprehensive literature review of the research variables. The current study has used the quantitative research approach. In the quantitative approach, the researchers used the questionnaire to collect the primary data from the research respondents. The population is the student who used e-learning platforms during the COVID-19 pandemic. The researcher chose a sample of 382 individuals. This study found positive and significant relationships between (online services and acceptance of e-learning) and student performance during the COVID-19 using e-learning platforms.

1. Introduction

E-learning applications, which started as providing education services inflexible and individual conditions to individuals who did not have the opportunity to participate in face-to-face education in the early stages, have come to the point of developing and establishing their e-learning systems. Such e-learning systems happened in the national and international context, with internet technologies rapidly transforming social life in the 21st century. In this sense, undergraduate and graduate courses in most universities are given online for various reasons, such as increasing the quality and diversity in education, making the interaction between universities more efficient, reaching more students, and reducing economic costs. From the student's point of view, there are many reasons and advantages for the student to prefer e-learning courses. In this sense, it has been stated in the relevant literature that the reasons for students to choose e-learning mainly consist of various individual variables. Such variables include but are not limited to being able to participate from where they live, being suitable for work schedules, costs, life roles, transportation difficulties, and impossibilities (Pichette, 2009). In addition, online e-learning programs in higher education provide students with the opportunity to stay in their own country and study at institutions in other countries. COVID-19 pandemic or coronavirus pandemic, virus outbreak that emerged on 1 December 2019, in Wuhan, the capital of the Hubei region of China. Here is a specific reason to respond to various patients and develop a vaccine to treat pneumonia by spotting SARS-CoV-2, a new coronavirus identified. The transmission rate of the virus, which can be transmitted from person to person, showed growth in mid-January 2020. Then, cases of the virus in various countries in Europe, North America, and Asia-Pacific would begin to be reported. It was declared a global epidemic by the World Health Organization on 11 March 2020. On 13 March 2020, it was reported that Europe had then become the epicenter of the coronavirus crisis. As of 1 August 2021, while there were 198,902,559 confirmed cases and 179,523,116 recoveries globally, 4,238,546 patients died due to the virus.

The COVID-19 pandemic threatens to deteriorate educational outcomes further. The pandemic has already had an enormous impact on education with the closure of schools in almost all parts of the planet, representing the most critical simultaneous crisis that all the world's educational systems have suffered in our time. The damage will be even more severe as the health emergency spills over into the economy and triggers a deep global recession. These costs that the crisis will have are described later. The unequal learning loss for different populations present during the pandemic requires schools and teachers to assess students' knowledge and skills when they start school again. This allows educators to plan curriculum tailored to their levels and develop appropriate differentiated methods to support students. A recent review of research on learning loss during the pandemic identified only eight studies; all focus on OECD countries that have experienced relatively short periods of school closure (Belgium, Netherlands, Switzerland, Spain, the United States, Australia, and Germany). These studies confirm the loss of learning in most cases and increases in educational inequality in some. However, they also reveal heterogeneous learning effects resulting from closures by school subjects and academic levels (Donelly and Patrinos 2021).

E-learning, which emerged in parallel with the developments in the internet and other information technologies, offers students equal opportunities in education to reach large masses in the education and training sector in recent years. For

https://dx.doi.org/10.30566/ijo-bs/2021.10.65

this reason, it is observed that both academic and other institutions that provide services tend to invest in e-learning systems. In this context, information technologies are beginning to be an effective tool to transform education and training activities in universities into a contemporary and high-performance student-centered structure. In e-learning, activities in the education and training process (services such as lectures, forums, discussions, videos, live broadcasts, homework, quizzes, midterm exams, etc.) are carried out using information technologies. For e-learning, which is a typical information system, there are various studies in the literature on the factors that determine success. User performance is shown as one of the most critical factors in evaluating the success of information systems (Chiu et al., 2007; DeLone & McLean, 2002). In e-learning success, on the other hand, studies that examine the factors affecting student performance are generally emphasized. Academic success in e-learning is possible by identifying and analyzing the factors affecting students' performance, who are considered the end-users and customers of the system (Işık 2009; Lee & Lee, 2008). Factors affecting student performance can be counted as student attitude, teacher attitude, education (course) technology, system design, and environmental factors (Arbaugh, 2002). In the model developed by Wang (2003) to measure student performance in asynchronous e-learning systems, student performance is analyzed in four dimensions: student interface, learning society, content, and personal behaviors. It is predicted that designs that will increase customer performance in e-learning will lead to positive changes in attitudes and perceptions towards e-learning systems and increase the rate of use (Roca et al., 2006). Similarly, it is stated that the participation of e-learning users and their attitudes towards the elements of the e-learning system is essential for the continuity of the system's success. This study aims to determine the impact of online services and the acceptance of e-learning on student performance during the pandemic of COVID-19 using e-learning platforms. This research will provide a comprehensive literature review of the research variables. The following sections will show the methodology used in this research and the tests and examinations used in the study. This paper will also discuss the findings of this research and include a conclusion for this research.

2. Literature Review

Social Learning Theory (Vygotsky, 1978) emphasizes the effectiveness of the social interaction process among students on learning. Considering the foundations on which this theory is based, it is predicted that today's students should be active in learning environments. Group learning activities can be shown as one of the ways that enable students to be engaged in learning environments (Açıkgöz, 2009; Aydede & Kesercioğlu, 2012; Baepler & Walker, 2014; Park & Choi, 2014; Prince, 2004). The social interaction process that occurs during group work encourages group members to share their ideas with other members and allows for the reorganization of existing information. Depending on the fact that the activities to be included in the learning environments are carried out in the form of group work, the students; can have many skills such as asking questions, obtaining information, discussing with each other, producing solutions, and sharing (Demirel, 2015; Greitemeyer & Shulz, 2003). Activities based on group work help students understand and help them develop and organize their knowledge (Van Boxtel, Van der Linden, & Kanselaar, 2000); (Saeed, & Bekhet 2018). During the group work process, while the group members are provided with the opportunity to discuss existing thoughts and ideas mutually, the chance to reorganize the knowledge they have is created (Aydın & Atalay, 2014; Doymuş, Şimşek, & Şimşek, 2005; Järvelä et al., 2013); (Saeed, Bekhet & Dhar 2017). In line with these opportunities, it is stated that it would be appropriate to carry out problem-solving activities within the framework of group work activities (Delice & Taşova, 2011; Dillenbourg & Traum, 2006; Evan & Swan, 2014; Karatas & Baki, 2013; Sepeng & Webb, 2012). Mutual discussions between group members in problem-solving with the group can play a role in the realization of various types of learning activities (Dwyer, Hogan, & Stewart, 2014; Gillies, 2004). Emphasizing the effects of group work activities on cognitive skills, researchers state that students whose problem solving are done through group work perform more successfully than individual problem solvers.

On the other hand, Hesse et al. (2015), emphasizing the importance of group problem-solving activities on social skills and cognitive skills, argue that affective effects are practical on problem-solving skills. The affective learning process (Gömleksiz & Kan, 2012), which is described as emotional states that are thought to affect the learning process positively or negatively, is seen as important in terms of being motivated and achieving outputs (Blanco, Guerrero, & Caballero, 2013; McLeod, 1988; Sriraman, 2003). As a result of these studies, it is seen that group studies based on working together have essential effects on identifying and developing problem-solving skills. It is thought that creating the problem-solving processes planned to be realized to allow students to exchange ideas with their peers and construct their knowledge will play an essential role in learning.

3. Research Model and Hypotheses

Students who receive online distance education study with people from many different countries, bringing more significant heterogeneity of personal, environmental, and cultural perspectives than on-campus education (Harrison, Harrison, Robinson, & Rawlings, 2018). The importance of online learning environments for today's students, for whom digital and online technologies have become an indispensable part of life (Li, 2019). Which has been emphasized in many studies (Alhamami, 2018; Chakowa, 2018; Compton, 2009; Gütl, Chang, Edwards, & Boruta, 2013; Harrison et al., 2018; Hartnett, 2016; Li, 2019; Petersen, 2014; Pichette, 2009; Schulze & Scholz, 2018). The fact that computer and internet technologies transform learning online, in general, is also witnessed in language learning/foreign language learning activities, which is a unique learning area. With the introduction of the internet into daily life in the early 1980s and the

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start of language teaching activities based on internet technologies in the 1990s, e-learning platforms for language teaching, Web 2.0 technologies and online language learning have developed rapidly (Petersen, 2014). In this sense, Schulze and Scholz (2018) stated that there is a tendency to give more language courses online today. It has been stated that the reasons for this are that online environments can provide students with new social and learning interactions, expand students' access to education, and provide an individualized learning experience in larger classrooms. However, foreign language courses are thought to be one of the most challenging courses to learn through distance education due to the complex nature of the skills and knowledge required for language proficiency (Hurd, 2006).

Today, it is possible to see the reflections of the developments in technology in the field of education. In the face of this situation, computer and internet technologies expand the boundaries of learning environments while bringing with them some opportunities (Arnseth & Hatlevik, 2012; Spector, 2014; Young, 2003). Online learning is one of the most concrete examples of this situation. Online learning (Khan, 1997; Holmes & Gardner, 2006), which is based on the realization of education and training activities on the internet, can be defined as the transfer of the communication process between the learner and the content through internet technologies (Ally, 2004; Gülbahar, 2009). Online learning environments add a different dimension to the structure of traditional classroom environments and enable learning communities to come together in electronic environments (Wang, 2008). From this point of view, it is possible to benefit from online learning environments within the scope of group work (Beldarrain, 2006; Deiglmayr and Spada, 2010; Stahl, Koschmann, & Suthers, 2006). Possibilities offered by internet technologies have been gathering students at different distances in terms of location, the opportunity to receive education by bringing them together within the communication. It has been one of the factors that ensured the acceptance of online learning within the scope of educational activities (Curtis & Lawson, 2001; Çalışkan, 2002; Henri, 1992). An example of learning to be carried out in these environments is Computer-Assisted Cooperative Learning (CBS) (Lipponen et al., 2003; Stahl, Koschmann, & Suthers, 2006). With the BDIÖ, the necessity of bringing together student groups in the same environment has been eliminated. It is possible to carry out group work within the possibilities of computer and internet environment. In this case, the interaction between student-teacher-content is provided through online settings, allowing group work activities to be carried out (Garrison, Anderson, & Archer, 2001; Johnson & Johnson, 1996; Khan, 2007; Kirschner & Kreijns 2005; Pinheiro & Simões, 2012; Resta and Laferrière, 2007). Hence this research proposes the following hypotheses.

H1: There is a positive and significant relationship between online services and student performance during the COVID-19 Pandemic using e-learning platforms.

H2: There is a positive and significant relationship between acceptance of e-learning and student performance during the COVID-19 Pandemic using e-learning platforms.

Based on the above arguments this research proposes the following conceptual framework:

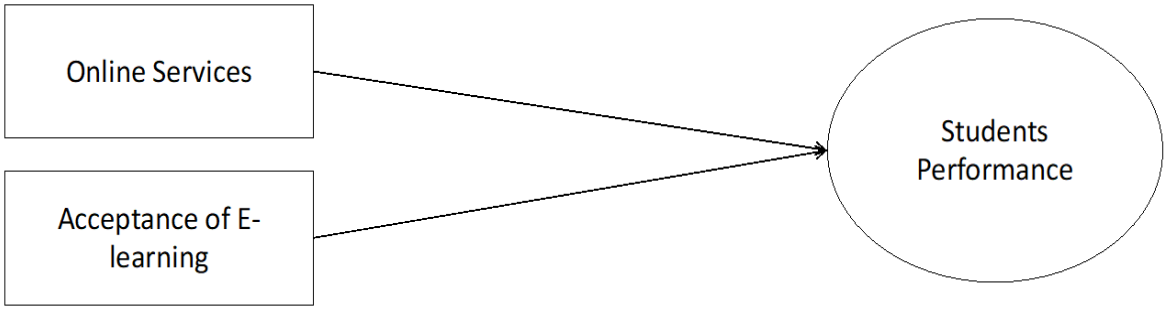

Figure 1: Research conceptual model.

4. Methodology

The current research has employed the quantitative research approach. It presents an observable, measurable, and numerically expressible manner by objectifying facts and events. The aim is to measure the social behaviors of individuals objectively through observation, experiment, and test and to explain them with numerical data. A quantitative survey was conducted, which was used as a method of collecting data for this research. A quantitative survey is ideal for a cross-sectional study like this, where data is collected just once from the research population. Generally, one kind of survey is used: the quantitative survey (questionnaire) (Sileyew, 2019). For this study, the population is the student who used e-learning platforms during the COVID-19 Pandemic. The researcher chose a sample of 382 individuals. Three hundred eighty-two respondents were selected because of researchers' recommendations like Miles et al. (2014). The latter claimed that for the number of variables in this study, a sample of more than 250 respondents is required to ensure statistical power and that the model will be statistically robust. The random sampling technique involved a sample chosen based on the

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random sampling of the respondents, which was used in the current study. The SPSS was used to test the relationships between the independent variables and the dependent variable.

5. Data Analysis and Results

To achieve the research objective, descriptive statistics analysis was employed to clarify the respondent's profile and the assigned factors of the research. The descriptive study shows the mean and standard deviation. Before proceeding to the inferential tests, explanatory tests were used; the purpose of conducting the definitive test is to examine the respondent's profile, reliability, and validity of the used model, several tests such as normality test, reliability test, and convergent validity. And finally, the correlation test was employed.

5.1 Respondents Profile

The profiles of respondents are tests that are used to make sure that all the respondents were selected randomly. This test was also used to identify the background of the respondents. For this reason, the profiles of respondents contained five criteria, which are gender, age, education level, income level, and experience, and company.

Table 1 shows the respondent's profiles for those participating in the study. As shown in table 1, the first category was gender, and it was shown that most participants were male, with a percentage of 74.3% and n= 283 participants. Meanwhile, the female category was only 25.7% of the total participants and n= 99 participants.

The second category was age, and in this study, most participants were from the 26 to 30 years old category with a percentage of 32.2% and n= 123 participants. Also, the 17 to 25 years old category recorded 15.8% with n= 60 participants. Next, the 31 to 35 years old category has recorded a 17.1 % with n= 65. The lowest percentage recorded was the 36 to 40 years old category with only 10.5%, n = 40. Finally, the above 40 years old category recorded 24.3 % and n = 94, which was the second highest in the age category.

The third category was the respondents' educational level. In this category, the findings showed that there were only three types of qualifications among the respondents: diploma, bachelor, and master's degree. The bachelor's degree category recorded the highest percentage, 64.5%, and n = 246. The diploma category recorded 22.4% and n = 85, and finally, the master category recorded 13.2% and n = 51.

The fourth category was the income level. In this category, the findings showed that most of the respondents were above USD 1001 (85.5%, n = 328). The category of USD 751 to USD 1,000 recorded a percentage of 10.5% with n = 40. Finally, the category of USD 500 to USD 750 recorded a percentage of 3.9% with n = 14.

Table 1: Profile of Respondents (N = 382)

Category	Frequency	%	Category	Frequency	%
Gender			Education level		
Male	283	74.3	Diploma	85	22.4
Female	99	25.7	Bachelor	246	64.5
Age			Master	51	13.2
17-25 yrs	60	15.8	Income level (USD)		
26-30 yrs	123	32.2	500 - 750	14	3.9
31- 35 yrs	65	17.1	751- 1,000	40	10.5
36- 40 yrs	40	10.5	1,001 and above	328	85.5
> 40 years	94	24.3			

5.2 Normality Test

The normality test is used to ensure whether all data meet the normality assumption and provide all variables in the proposed model were examined. Firstly, it was used to measure the influences that can happen due to the sample size. For this, two main tests were used, which were the Skewness and kurtosis tests. The Skewness and kurtosis tests for each variable were employed to assess the normality. It is argued that data is considered normal if the Skewness value is between -2 to +2 and the kurtosis value is between -7 to +7 (Hair et al., 2010; Kline, 1998). According to table 2, the variables (online services, acceptance of e-learning, and student performance) had an acceptable range of Skewness and

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Kurtosis values. The Skewness values ranged between 0.165 and 0.572. In the same line, the Kurtosis values ranged between -1.411 and 0.364.

Table 2: Results of Skewness and Kurtosis for Normality Test

Constructs	Skewness	Kurtosis Statistic
Online Services	0.165	- 1.411
Acceptance of E-learning	0.572	0.364
Student Performance	0.437	0.205

5.3 Construct Reliability

The construct reliability test has been used in the study to find out the variables' items' internal consistency. This test has used two main factors to determine internal consistency: Cronbach alpha and composite reliability. These two factors should be greater than 0.7 to be acceptable. The following conclusion was drawn based on the results from the following table 3:

- *Online services items have shown great internal consistency with Cronbach alpha and composite reliability = 0.796 and 0.893, respectively.*
- *Acceptance of e-learning items has shown great internal consistency with Cronbach alpha and composite reliability = 0.809 and 0.910, respectively.*
- *Student performance items have shown great internal consistency with Cronbach alpha and composite reliability = 0.802 and 0.899, respectively.*

To ensure that the data is reliable and valid, convergent validity is another test to ensure the validity of the data. This test uses the average variance extracted (AVE) values. According to (Hair et al., 2017), the AVE should be greater than 0.5. Based on Table 3, the variables (online services, acceptance of e-learning, and student performance) have acceptable AVE values, 0.611 and 0.789, respectively.

Table 3: Reliability and convergent validity

Constructs	Cronbach's alpha (> 0.7)	Composite Reliability (> 0.7)	Average Variance Extracted (AVE) (> 0.5)
Online Services	0.796	0.893	0.611
Acceptance of E-learning	0.809	0.910	0.789
Student Performance	0.802	0.899	0.659

5.4 Descriptive Statistics

As the name implies, the descriptive analysis consists of describing the key trends in the existing data and observing situations that lead to new facts. This analysis is based on one or several research questions and does not have hypotheses. In addition, it includes the collection of related data, then organizes, tabulates, and describes the results. A basic descriptive analysis involves calculating the simple measures of composition and distribution of variables. Depending on the type of data, they can be proportions, rates, ratios, or averages. In addition, when necessary, as in the case of surveys, association measures between variables can be used to decide whether the observed differences between women and men are statistically significant or not. According to table 4, the minimum measurement scale was 1, while the maximum measurement scale was 5. The mean scores for the variables (online services, acceptance of e-learning, and student performance) = 3.2452, 3.6598, and 3.9365 respectively. These results confirm that most respondents were in average agreement with the items stated in the questionnaire. Also, these results demonstrate the essential role of the independent variable on student performance during the COVID-19 using e-learning platforms. Furthermore, the standard deviations for the variable were 1.06886, 0.73181, and 0.9487, respectively.

Table 4: Descriptive Statistics for Study Variables

	N	Minimum	Maximum	Mean	Std. Deviation
OS	382	1.00	5.00	3.2452	1.06886
AEL	382	1.00	5.00	3.6598	0.73181
SP	382	1.00	5.00	3.9365	0.9487

OS: Online Services; AEL: Acceptance of E-learning; SP: Student Performance

5.5 Direct Effect Test

The direct effect test is the most important in the study. It is also called the correlation test. The correlation between two variables is concluded by a correlation coefficient, whose value oscillates between -1 and +1. If the correlation coefficient

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is towards +1, it indicates a positive relationship between the variables, and -1 means a negative relationship between the two variables. This test aims to identify the relationship between the independent variables (online services and acceptance of e-learning) and the dependent variable (student performance during the COVID-19 using e-learning platforms). The following conclusion was drawn based on the results on the next table 5:

- *There is a positive and significant relationship between online services and student performance during the COVID-19 using e-learning platforms with r = 0.071, t-value = 2.778, and a significant level of 0.036.*
- *There is a positive and significant relationship between acceptance of e-learning and student performance during the COVID-19 using e-learning platforms with r = 0.203, t-value = 3.931, and a significant level of 0.003.*

Table 5: Summary of the Direct Effect

Hypothesis	Relationship	Std Beta	Std Error	t-value	p-value	Decision
H1	OS -> SP	0.071	0.133	2.778	0.036	Supported
H2	AEL -> SP	0.203	0.165	3.931	0.003	Supported

6. Discussion and Implications

The discussion section is the last step in the process of the findings. This section presents the results related to the research hypothesis and compares them with the results of the previous studies. The most important result of this research can be seen in the results of the direct effect test, which was that there is a positive and significant relationship between online services and student performance during the COVID-19 using e-learning platforms with r = 0.071, t-value = 2.778, and a significant level of 0.036. Also, there is a positive and significant relationship between acceptance of e-learning and student performance during the COVID-19 using e-learning platforms with r = 0.203, t-value = 3.931, and a significant level of 0.003.

The previous studies support this result. Students who receive online distance education study with people from many different countries, bringing more significant heterogeneity of personal, environmental, and cultural perspectives than on-campus education (Harrison, Harrison, Robinson, & Rawlings, 2018). The importance of online learning environments for today's students, for whom digital and online technologies have become an indispensable part of life (Li, 2019). Hs been emphasized in many studies (Alhamami, 2018; Chakowa, 2018; Compton, 2009; Gütl, Chang, Edwards, & Boruta, 2013; Harrison et al., 2018; Hartnett, 2016; Li, 2019; Petersen, 2014; Pichette, 2009; Schulze & Scholz, 2018). Computer and internet technologies transform learning online, in general, is also witnessed in language learning/foreign language learning activities, which is a unique learning area. With the introduction of the internet into daily life in the early 1980s and the start of language teaching activities based on internet technologies in the 1990s, e-learning platforms for language teaching, Web 2.0 technologies, and online language learning have developed rapidly (Petersen, 2014). In this sense, Schulze and Scholz (2018) stated a tendency to give more language courses online today. It has been noted that the reasons for this are that online environments can provide students with new social and learning interactions, expand students' access to education, and provide an individualized learning experience in larger classrooms. However, foreign language courses are thought to be one of the most challenging courses to learn through distance education due to the complex nature of the skills and knowledge required for language proficiency (Hurd, 2006).

7. Conclusion

Even before the COVID-19 pandemic, the world was already facing a learning crisis. The COVID-19 pandemic threatens to deteriorate educational outcomes further. The pandemic has already had an enormous impact on education with the closure of schools in almost all parts of the planet, representing the most crucial simultaneous crisis that all the world's educational systems have suffered in our time. The damage will be even more severe as the health emergency spills over into the economy and triggers a deep global recession. These costs that the crisis will have are described later.

This study provided insights for a student's performance model linked to the online services and acceptance of e-learning. This insight suggested a conceptual framework that stands on the role of online services and acceptance of e-learning was integrated into students' performance during the COVID-19 pandemic using e-learning platforms.

The current study has used the quantitative research approach. In the quantitative approach, the researchers used the questionnaire to collect the primary data from the research respondents. The population is the student who used e-learning platforms during the COVID-19 pandemic. The researcher chose a sample of 382 individuals.

This study found positive and significant relationships between (online services and acceptance of e-learning) and student performance during the COVID-19 using e-learning platforms.

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