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Factors Influencing Students' Academic Performance in Online Courses During the COVID-19 Pandemic

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ABSTRACT

This study aims to investigate how online learning self-efficacy, self-regulated learning, and achievement motivation affect students' academic performance in online courses during the COVID-19 pandemic. The study participants were students from the Office Administration Education Study Program at Universitas Negeri Surabaya. We used structural equation modeling (SEM) to measure the direct and indirect effects of the structural model. The results show that online learning self-efficacy positively affects self-regulated learning, achievement motivation, and academic performance. However, self-regulated learning and achievement motivation do not affect academic performance, and also do not mediate the relationship between online learning self-efficacy and academic performance.

Since the outbreak of the COVID-19 pandemic, all universities in Indonesia have shifted their learning process to online learning. While students have now started to be able to adapt to online learning, studying in an online environment still brings challenges that need to be addressed immediately. Students reported that after the transition to online learning, online learning was more difficult than offline learning (Aguilera-hermida, 2020). The difficulty for students participating in online learning is the availability of internet access and technology (Li & Lalani, 2020). Students are accustomed to operating social media in their daily lives, but it is different from technological devices or software for educational purposes (Estira, 2020). In this regard, lecturers have tried to use learning media that are easily accessible by students. For example, the research findings of Wulandari & Panduwinata (2021) on the effectiveness of using Google Classroom as an online learning media during the COVID-19 pandemic show that the learning media was quite effective. However, Handayani & Sholikhah (2021) discovered that students' academic performance shows a decline marked by reduced enthusiasm and activities compared to offline learning before the pandemic. Therefore, we are interested in investigating further what factors influence students' academic performance in online courses during the COVID-19 pandemic.

Key (2020) stated that studying in an online learning environment in the midst of a pandemic can lead to frustration, loneliness, and difficulty. However, students can overcome this problem when they have confidence in themselves, and also put forth their efforts and determination to participate in online learning (Blanco et al., 2020). Believing in one's own ability to learn and succeed in an online learning environment is known as online learning self-efficacy (Taipjutorus, 2014). Aguilera-Hermida (2020) states that self-efficacy is an important factor for the successful use and acceptance of online learning, whether in an emergency situation or not. Students who have high self-efficacy will be more resilient to obstacles and more motivated than those who have lower self-efficacy (DeNoyelles, Hornik, & Johnson, 2014). They will also use more important self-regulatory strategies for online learning, which ultimately leads to improved performance and overall learning outcomes (Bradley, Browne, & Kelley, 2017). Thus, it is important to understand self-efficacy and its relationship to various academic practices in the educational environment because it can have an impact on student goals, efforts, and achievement (Kundu, 2020).

In addition, the structure of online and offline learning is different. In online learning, lecturers are not physically present or provide guidance for students. These conditions require students to independently manage their own learning activities. Students need to self-regulate themselves to remain persistent in achieving academic success (Lock et al., 2017). Self-regulated learning is the ability to self-regulate behavior and carry out the learning process (Landrum, 2020). Students who use self-regulation strategies will be aware of their learning environment and use appropriate strategies and activities to support their self-regulation on online learning platforms (Delen & Liew, 2016). A high degree of self-regulated learning enables students to better interact and collaborate with peers and improve their learning performance (Ekici et al., 2014). In other words, successful online learners are self-regulated learners because they are independent and can manage themselves effectively (Eom & Ashill, 2016; Wong et al., 2019). Previous research has shown that self-regulated learning can predict academic performance in both traditional and online learning settings (Bradley et al., 2017; Delen & Liew, 2016; Goulão & Menedez, 2015).

Achievement motivation is also seen as an important factor for successful learning in an online learning setting (Hartnett, George, & Dron, 2021). Achievement motivation is a desire that encourages students to strive to achieve standards or measures of excellence (Dwijuliani et al., 2021). Student academic performance is a function of achievement motivation (Dagnew, 2017). This means that achievement motivation is an influential driving force in realizing students' success in achieving standards of excellence in their learning process. When students are motivated, they will try harder to complete tasks, achieving specific goals or competency levels to ultimately obtain the required success in learning and academic performance (Arbabisarjou et al., 2016). They are more willing to engage in challenging activities, actively participate, enjoy the learning process, and also demonstrate higher levels of performance, perseverance, and creativity (Hartnett et al., 2021; Schunk et al., 2008). Thus, they will better understand the material they learn (Abdul & See, 2010). However, lacking motivation can result in students spending extra time completing their assignments, turning in late assignments, or having poor quality of work (Albelbisi & Yusop, 2019).

Furthermore, many researchers have examined the use of online learning self-efficacy, self-regulated learning, and achievement motivation in shaping students' online learning outcomes. They suggested that online learning self-efficacy (Ithriah et al., 2020; Kundu, 2020; Yavuzalp & Bahcivan, 2020), self-regulated learning (Bradley et al., 2017; Goulão & Menedez, 2015; Wong et al., 2019), and achievement motivation (Dwijuliani et al., 2021; Kumar & Tankha, 2020) are associated with academic performance. Therefore, this study aims to investigate the influence of online learning self-efficacy, self-regulated learning, and achievement motivation on academic performance in online courses during the COVID-19 pandemic.

METHODS

The participants in this study were students of the Office Administration Education Program at Universitas Negeri Surabaya in the even semester of the 2020/2021 academic year, with a total of 249 students. Saturation sampling was used as a sampling method. To collect the data for this study, we used an online questionnaire which consists of two parts: (1) demographic information (age, gender, level of computer skills, and student's experience with online learning before the pandemic); (2) items for the three constructs used in the study: online learning self-efficacy, self-regulated learning, and achievement motivation. We also require students to report their grade point averages (GPA) as a measurement of academic performance.

To measure online learning self-efficacy, we adopted the Online Learning Self-Efficacy Scale (OLSES), which consists of three subscales: learning in an online setting, time management, and application of technology (Yavuzalp & Bahcivan, 2020; Zimmerman & Kulikowich, 2016). To measure self-regulated learning, we also adopted the Online Self-Regulated Learning Questionnaire (OSLQ) scale (Barnard et al., 2009; Barnard et al., 2008), which consists of six subscales: goal setting, environmental management, assignment strategy, time management, seeking help, and self-evaluation. While achievement motivation instruments were developed with two types of motivation in mind: intrinsic motivation and extrinsic motivation (Saeid & Eslaminejad, 2016; Yunus et al., 2021). We also asked participants to answer the questions on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

The data was then statistically analyzed using structural equation modeling (SEM) in Mplus 7. Structural equation modeling (SEM) is a statistical technique to analyze the causal relationship between several dependent variables and several independent variables simultaneously (Geiser, 2013). In this study, structural equation modeling (SEM) was used to analyze the direct effect of online learning self-efficacy, self-regulated learning, and achievement motivation on academic performance in an online course during the COVID-19 pandemic. The mediating role of self-regulated learning and achievement motivation on the relationship between online learning self-efficacy and academic performance is also measured.

We followed structural equation modeling measures (SEM) which consists of: model formulation, model identification, model estimation, model evaluation, and model modification (Geiser, 2013; Wang & Wang, 2012). Model formulations determines the models formulated based on theory and other empirical findings, while model identification determines whether the parameters can be just-identified or over identified. The model estimation serves to estimate model parameters and produce function fittings. Maximum Likelihood (ML) was used as the estimation method to examine the model, determine the fit index, and consider direct and indirect effects (Wang & Wang, 2012). In the test step, various Goodness-of-Fit indices were checked out to estimate the model fit: Chi-Square ($\chi 2/df$), Comparative Fit Index (CFI), *Tucker-Lewis* Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Residual (SRMR). Wang & Wang (2012) suggested that the small and insignificant $\chi 2(df)$ value is indicated as a good fit. CFI and TLI have the same criterion; values $\geq .90$ are regarded acceptable, and values $\geq .95$ are a good fit. The RMSEA values $\leq .05$ are regarded as a good fit, and $< .08$ are acceptable fit. Meanwhile, SRMR $< .05$ indicated a good model fit. After the testing step, we interpreted the direct and indirect impact of the construct ($p < .05$). The final step is model modification: models will be revised if the Goodness-of-Fit indices are poor or do not fit the data (Wang & Wang, 2012).

RESULTS

Demographic Descriptive Statistics

The data were collected through electronic questionnaire presented to a sample of students in the Office Administration Education Program. The study samples contained 249 participants: 26 (10.4%) males and 223 (89.6%) females. The mean age of the participants was 20.5 years (SD = 1.87), ranging from 18 to 23 years old. The majority of the participants (77.1%) describe their computer skills at the intermediate level, 18.5% at the beginner level, and 4.4% at the expert level. 9.2% of participants reported no online learning experience before the COVID-19 pandemic, 23.3% had one or two experiences, 53.8% had few experiences, 13.7% had many experiences. The sample's mean grade-point average (GPA) was 3.62 (SD = 0.123), ranging from 3.00 to 4.00.

Table 1. Demographic characteristic of the participants

	Frequency	Percentage (%)
Year level		
First year	63	25,3
Second year	72	28,9
Third year	69	27,7
Fourth year	45	18,1
Age		
20 and below	181	72,7
21 and above	68	27,3
Gender		
Male	26	10,4
Female	223	89,6
Level of computer skills		
Beginner	46	18,5
Intermediate	192	77,1
Expert	11	4,4
Online learning experience before the COVID-19		
None	23	9,2
One or two	58	23,3
Few	134	53,8
Many	34	13,7

Confirmatory Factor Analysis

The constructs of online learning self-efficacy, self-regulated learning, and achievement motivation were tested using first-order CFA with a three-factor models. The CFA test shows that the chi-square value was statistically significant with χ^2(df)= 98.810 (28), p<.000; however other statistict fell within recommended standards (CFI= .950; TLI= .928; RMSEA= .08; and SRMR= .039). Overall, the model fit is acceptable (Wang & Wang, 2012).

Table 2. Measurement Model

	Item	Factor Loading	*P-value*	Construct Reliability
Online Learning Self-Efficacy (OLSE)	OLSE1	0.841	0.000	0.831
	OLSE2	0.772	0.000	
	OLSE3	0.750	0.000	
Self-Regulated Learning (SRL)	SRL1	0.648	0.000	0.838
	SRL2	0.693	0.000	
	SRL3	0.762	0.000	
	SRL4	0.815	0.000	
	SRL5	0.523	0.000	
	SRL6	0.625	0.000	
Achievement Motivation (MOT)	MOT1	0.839	0.000	0.826
	MOT2	0.838	0.000	

The measurement model also evaluated by examining discriminant validity and construct reliability. The items have satisfactory indicator reliability when each item's loading is at least 0.4 or higher and stastistically significant at the level of 0.05 (Wang & Wang, 2012). Table 2 shows that all items loaded significantly on the latent variables (p<.000) with standardized factor loadings ranging from a lower bound of 0.523 to an upper bound of 0.841. The results of construct reliability calculations shows that all constructs are reliable (r >.6). Thus, all items used for this study have met the item reliability criteria (Wang & Wang, 2012).

Structural Model

We used the structural model to examined the effect of online learning self-efficacy, self-regulated learning, and achievement motivation on academic performance (GPA). The results of the structural model indicated acceptable fit, with χ^2(df)= 117.896(47), p<.00; CFI= .945; TLI= .922; RMSEA= .078; and SRMR= .040. Figure 1 and Table 3 below displayed the path coefficients results.

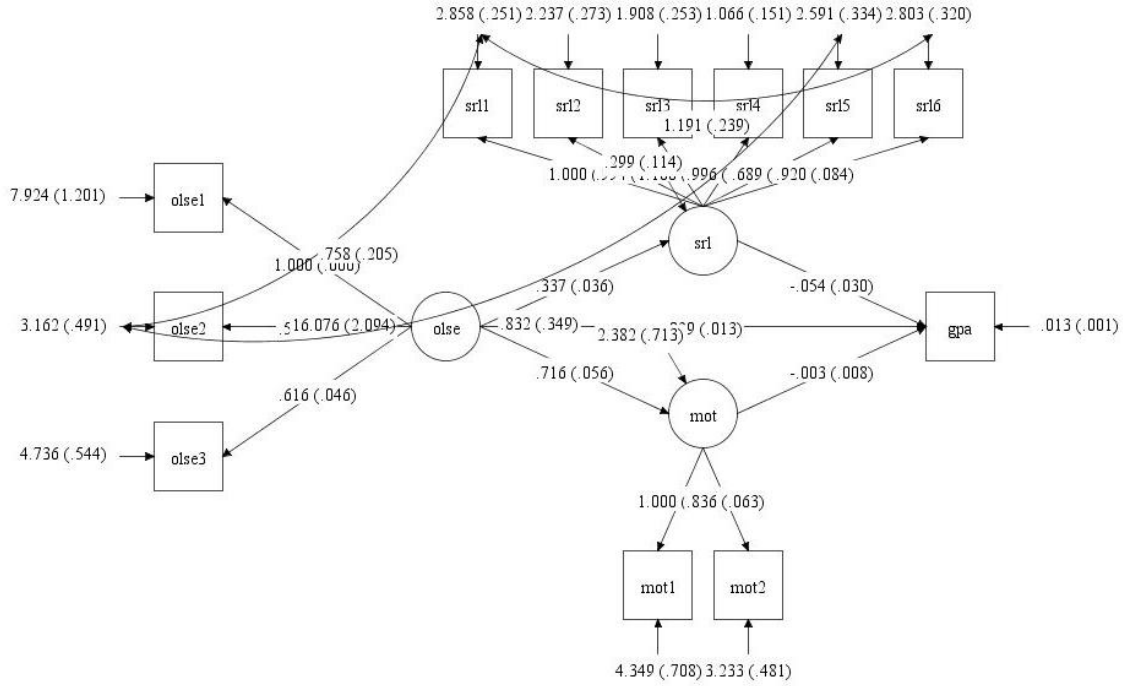

Figure 1. The Structural Model

Direct and Indirect Effect

The structural model estimation results (Table 3) shows that online learning self-efficacy positively affects self-regulated learning (β= .337, p< .000), achievement motivation (β= .716; p< .000), and academic achievement (β= .029; p< .022). The results (Table 3) also shows that self-regulated learning (β= -0,054; p< 0,068) and achievement motivation (β= -0,002, p< 0,715) has no significant effect on academic achievement. Table 3 also reflects the indirect effects of the mediation model. The findings shows that self-regulated learning (β= -.003, p< .715) and achievement motivation (β= -.018, p< .084) do not mediated the relationship between online learning self-efficacy and academic achievement.

Table 3. Direct and indirect effect of the path model

Hypothesized Relationship	Estimates	*t*-values	*ρ*
Direct path			
OLSE → SRL	0.337	9.428	0.000
OLSE → Achievement motivation	0.716	12.838	0.000
OLSE → GPA	0.029	2.291	0.022
SRL → GPA	-0.054	-1.824	0.068
Achievement motivation→ GPA	-0.003	-0.365	0.715
Indirect path			
OLSE → SRL → GPA	-0.018	-1.728	0.084
OLSE → Achievement motivation→ GPA	-0.002	-0.365	0.715

DISCUSSION

We found that online learning self-efficacy is positively and significantly related to self-regulated learning, achievement motivation, and academic performance in online courses during the COVID-19 pandemic. These findings indicate that students' beliefs in their capability to succeed in online courses increase self-regulation, achievement motivation, and academic performance. Maisaroh (2015) revealed that high-self-efficacy students would attempt to master the materials and conquer the obstacles in their learning process. This activity is also followed by other efforts such as selecting learning

strategies (Los, 2014; Ozer & Akcayoglu, 2021; Taipjutorus, 2014), mobilizing motivation, setting goals, and managing their behavior to achieve the goals (Majzub & Yusuf, 2015). The stronger a student's self-efficacy in the online course, the stronger their motivation (Alghamdi et al., 2020; Saeid & Eslaminejad, 2016). This matter also applies to the influence of self-efficacy on academic performance. Self-efficacy was linked to students' task choice, effort, persistence, and resilience; and was directly related to academic expectations and learning performance (Alghamdi et al., 2020).

In addition, students' perception of their online learning self-efficacy is closely related to their previous experience using technology (Heckel & Ringeisen, 2019). This can be shown from the finding that the majority of the Office Administration Education students believe they possess intermediate computer skills. The majority of students have also attended online courses several times before the COVID-19 pandemic outbreak. Their level of competence and experience are closely related to their confidence in being able to actively participate in online course activities during the pandemic, which has encouraged them to achieve good academic results. In line with Aguilera-Hermida (2020), students who were used to using technology before online courses were carried out due to the pandemic feel they have a better ability to achieve learning success, and this attitude was related to perceptions of self-efficacy. Even more, when students believe that they have the knowledge and resources to support them, it will positively affect their use of technology and their online learning performance (Alghamdi et al., 2020).

Contrary to expectations, self-regulated learning showed no significant relationship with academic achievement. It means that self-regulated learning does not contribute to or affect students' academic performance in online courses. These current findings are inconsistent with previous studies which found a positive relationship between these two variables (Delen & Liew, 2016; Goulão & Menedez, 2015; Wong et al., 2019). The possible cause of this situation may be linked to the change in learning behavior since stay-at-home orders became the consequence of pandemics, in which self-regulated learning became the student's primary learning method. According to Zimmerman (1989), students with good self-regulation will usually apply a learning strategy based on their observations of several factors such as environmental, personality, or attitudes. It means that, in specific contexts or situations during behavioral interaction, the impact of environmental factors can be more potent than personal factors or behavioral factors. In other words, personal and external sources of stimuli affected students' self-regulation learning strategies (Eom & Ashill, 2016), including social experience and the structure of the learning environment (Seli & Dembo, 2020). Some studies also found that self-regulation did not significantly predict students' learning outcomes in online courses when included in structural equation models or multiple regressions (Eom & Ashill, 2016; Kuo et al., 2013; Lim et al., 2020; Mehmed & Purwandari, 2019).

We also found that achievement motivation does not contribute to student's academic performance in an online courses during the COVID-19 pandemic. These current results contradict the previous studies (Arbabisarjou et al., 2016; Bansal & Pahwa, 2015; Dagnew, 2017; Kumar & Tankha, 2020; Suresh, 2015). Hasibuan et al. (2020) claim that while motivation by itself cannot have an impact on a student's academic performance, a number of other enabling elements can. According to Kim & Frick (2011), the convenience and adaptability of online learning have the greatest impact on student motivation. When content is relevant to their lives and they are technically proficient, learners are more likely to feel motivated and satisfied when engaging in online learning. Students' motivation will also rise if they are more motivated both before and during online learning and believe that it is the best learning environment for them. However, students who don't feel comfortable with online learning are more likely to lose interest in doing it again later (Kim & Frick, 2011). Since lecturers and peers are not physically present in an online learning environment, students who want to excel in it must maintain their motivation, interest, and perseverance (Delen & Liew, 2016). Therefore, efforts are required to raise the quality of online education. Our study's results supported previous studies which found no significant relationship between these two variables (Emmanuel et al., 2014; Hasan & Sarkar, 2018; Hasibuan et al., 2020).

The mediation analysis reveals that self-regulated learning and achievement motivation do not mediate the relationship between online learning self-efficacy and academic achievement. These results are not consistent with previous studies (Sheikholeslami, Mohammadi, Jahromi, & Kowsari, 2015; Sonmi, 2011; Yusuf, 2011). Yusuf (2011) suggested that the direct and indirect effects of self-efficacy on student academic achievement were mediated by achievement motivation and self-regulated learning strategies. However, there is a difference between the previous studies and ours. Our study was conducted on online learning during an emergency situation because of COVID-19, while previous studies were not. Some studies found that students' cognitive interactions and motivation decreased after the sudden transformation from traditional face-to-face learning to online learning due to the COVID-19 pandemic (Aguilera-hermida, 2020; Gustiani, 2020).

CONCLUSION

This study provides empirical evidence supporting online learning self-efficacy as an essential predictor of self-regulated learning, achievement motivation, and academic performance in an online course during the COVID-19 pandemic. However, this study also found that self-regulated learning and achievement motivation have no significant positive relationship with academic performance. It means that self-regulated learning and motivation are not enough to affect the academic performance of students in the Office Administration Study Program in online courses during the COVID-19 pandemic. Additionally, self-regulated learning and achievement motivation do not mediate the relationship between online learning self-efficacy and academic performance.

This study has limitations and weakness. Because the survey sample was limited to participants in the Office Administration Education Program, our findings cannot be generalized. In this study, female respondents outnumbered male respondents overall. Therefore, it is advised that future studies choose a more diverse sample and investigate additional variables linked to academic performance in online courses during the COVID-19 epidemic. We hope that our research's conclusions might be used to urge lecturers and academic institutions to give curriculum design and learning materials for online learning more consideration. Additionally, lecturers must give students the right feedback and motivate them to participate more actively in group discussions and other activities. We also anticipated parental support for the online learning initiatives. So, students will be able to retain their learning motivation and academic achievement thanks to the support of numerous parties and the favorable learning environment.

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