Journal of Business, Management, and Social Studies
Volume 3 Number 4 November 2023
e-ISSN: 2798-6209, pages 62-79
DOI: https://doi.org/10.53748/jbms.v3i4.83
Available online at: https://jbms.site/index.php/JBMS

Bridging the Digital Divide: Motivation and Academic Success in Indonesian Online Education

Firdiny Firensia Utama[1*], Nicole Nadya Aurelie Satyawan[2]
Sampoerna University, Indonesia
*Email: firdiny.utama@my.sampoernauniversity.ac.id**

Abstract, Objective *– With the strict regulations put in place due to COVID-19, scholastic activities have been forced to adjust from traditional in-class learning to online learning. There are an array of benefits associated with online learning including flexibility, accessibility, independence, and stress reduction. However, many students perform substandardly in online classes and most of them prefer face-to-face learning. Interestingly, the advantages and disadvantages of online learning have been found to be influenced by student motivation. Hence, this study aims to find the relationship between motivation, online learning, satisfaction, and academic performance.****Methodology*** *– An online survey was conducted with 110 students in Indonesia and SmartPLS was used to do a quantitative analysis on the data collected.* ***Findings*** *– The empirical results showed that motivation significantly affects online learning, online learning significantly affects satisfaction and academic performance, and satisfaction significantly affects academic performance. Hence, this study provides several implications, especially for schools and universities to establish efficient policies and services in their online learning method. For students to be more interactive, skillful, knowledgeable and eventually perform better in their academics, motivation, online learning success, and satisfaction need to be fulfilled beforehand.* ***Novelty*** *– Given the unique cultural, educational, and socioeconomic factors in Indonesia, the findings may offer valuable insights into the specific challenges and opportunities of online learning in this setting.*

Keywords: *self-determination theory, intrinsic and extrinsic motivation, online learning, academic performance*

I. INTRODUCTION

In the past two years, the world has been affected by the global outbreak, commonly known as the COVID-19 pandemic. According to WHO (2022), as of 30 September 2022, WHO has received around 614,385,693 confirmed cases from all over the world. The outbreak was a whole new situation where people had to stay at home for the time being and all activities were hampered due to the quarantine. This condition requires both organizations and individuals to adjust their daily activities to the new regulations set by the government. One of the activities that is greatly affected by this pandemic is no other than schools and universities' learning system (Zalat et al., 2021). The lockdown has led to the closure of schools, institutes, and universities, resulting in education shifting from traditional face-to-face learning to online learning systems (Pokhrel, 2021). In a research done by Mandasari (2020), the results show that online learning allows students to have more flexibility in terms of their learning time, easily accessible courses, and the ability to learn autonomously. In addition, it is also said that online learning enables students to take classes from distant places, as well as reduce their stress due to its flexibility (Mohammed et al., 2022). However, there still seems to be a reverse relationship between all these positive impacts and students' preferences and academic performance. The results from a study done by Selvaraj et al. (2021) indicate that the majority

Received: October 17, 2023; Revised: October 27, 2023; Accepted: November 23, 2023; Online Available: November 30, 2023;

of students from both schools and higher education prefer traditional face-to-face learning than online learning. Other than that, it is also stated that students perform poorer and receive lower grades in online classes (Ghosh et al., 2022). Interestingly, Gustianai (2020) asserts in her study that both benefits and drawbacks of online learning are influenced by student motivation, specifically students with a lack of motivation are more susceptible to the effects of external factors which in turn would lead to a poor academic performance.

Several research has examined the impact of online learning on students' academic performance during the COVID-19 pandemic. However, there are contradicting results regarding the situation. In their quantitative research, Engzell et al. (2022) found evidence that there is learning loss of up to 60% in primary school children across subject areas like math, spelling, and reading, due to the suspension of face-to-face learning. In addition to that, Mohammed et al. (2022) also claim that online learning causes students to get distracted easily and prevent them from paying attention to the lecturer. which will lead to a negatively impacted academic performance and poor academic result. Moreover, another research on undergraduate students also discovered that students who chose the face-to-face option of an introductory course performed 2% better than their classmates who chose the online learning option (Ghosh et al., 2022). On the contrary, Mandasari (2020) performed qualitative descriptive research and observed that remote learning has a favorable effect on academic performance, mainly in terms of learning motivation, engagement, and achievement. Additionally, a study that examines middle school students in China during COVID-19 lockdown also found that remote learning has a beneficial effect on students' exam performance, with academically-weaker students benefiting the most from this style of learning (Clark et al., 2021).

Considering the inconsistent results on the influence of online learning towards students' academic performance, this study intends to investigate further whether the learning environment has a significant impact on academic performance or are there other variables at play, specifically student motivation and satisfaction. The theory and model utilized will be based on the self determination theory, which has been used before by Gustiani (2020) to look into whether motivation influences students' online learning. This study aims to fill the gaps in earlier research and explore the relationship between motivation, online learning, satisfaction, and academic performance. We plan to build on Gustiani's (2020) past qualitative study by inquiring further about the potential effects of online learning towards academic performance and satisfaction, which were not previously investigated, and conducting our research using a quantitative method. Furthermore, we are going to specifically focus on school and university

students in Indonesia who are currently engaging in or have at one point done online learning due to the difficult circumstances posed by the COVID-19 pandemic.

2. LITERATURE REVIEW

Self-Determination Theory

Self-Determination Theory, or commonly known as SDT, is a widely accepted theoretical framework coined by Richard M. Ryan and Edward L. Deci in 1985 regarding human behavior, specifically motivation (Ryan & Deci, 2000). SDT is made up of multiple interrelated subtheories that contribute to the understanding of human mindsets: cognitive evaluation theory, organismic integration theory, causality orientations theory, basic needs theory, and goal contents theory (Sutter & Campbell, 2022). At its core, the theory assumes that people are hardwired towards healthy development and proactive tendencies like seeking knowledge and relationship with others (Ryan & Deci, 2020). However, these proclivities are not automatic and require the fulfillment of basic psychological needs for autonomy (the feeling of volition), competence (the feeling of mastery), and relatedness (the feeling of belonging) to be robust (Behzadnia et al., 2022). SDT believes that once the conditions are conducive, it will lead to positive consequences like wellness, growth, persistence, and higher achievement (Botnaru et al., 2021; Ryan & Deci 2020).

Motivation

According to the Self-Determination Theory, motivation can be distinguished into different types based on the varying reasons or intentions that give rise to the action (Ryan & Deci, 2000). The two broad categories are intrinsic motivation and extrinsic motivation. When people are intrinsically motivated, they are spontaneously performing a behavior "for their own sake" because they find it inherently interesting, and enjoyable, without the influence of external factors like incentive, approval, or pressure (Ryan & Deci, 2020, p. 2; Botnaru et al., 2020). Generally, intrinsic motivation is often associated with an individual's ambition and aspiration, while academically, it has been linked with improved grades and higher achievement (Gustiani, 2020; Nishimura & Sakurai, 2017). However, previous researches focusing on academic motivation have consistently shown a decrease in intrinsic motivation as one ages, particularly during adolescence (Nishimura & Sakurai, 2017).

On the contrary, when people are extrinsically motivated, they perform a behavior because it will possibly lead to a separable outcome like receiving a reward or avoiding a punishment (Botnaru et al., 2021). Ryan & Deci (2000) elaborated that people's attitudes when performing extrinsically motivated behavior range vastly from disinterest and resentment to willingness

and diligence. Thus, there are four subtypes of extrinsic motivation ranging from the most autonomous to the least autonomous: integrated regulation, identified regulation, introjected regulation, and external regulation (Nishimura & Sakurai, 2017). Integrated regulation involves self-examination, assimilating the reasons behind a behavior, and aligning it with existing values and beliefs (Ryan & Deci, 2000). Meanwhile, identified regulation involves recognizing the personal value of an action and simultaneously accepting it as his or her own (Botnaru et al., 2021; Ryan & Deci, 2000). The third subtype of extrinsic motivation, introjected regulation, involves the prevention of guilt and anxiety or attainment of approval and ego enhancements when performing a behavior (Nishimura & Sakurai, 2017). Finally, external regulation is the most common subtype of extrinsic motivation compared to intrinsic motivation and it involves engaging in a behavior to please external contingencies like receiving rewards and avoiding punishments (Ryan & Deci, 2000; Botnaru et al., 2021). Interestingly, Nishimura & Sakurai (2017) found that past studies on extrinsic motivation are inconsistent, with some reporting an increase, others observing a decrease, and another discovering no change in extrinsic motivation as a person ages.

Online Learning

Online learning or e-learning is a learning experience in both synchronous or asynchronous environments where the students can learn from instructors anywhere, anytime through their online devices (Dhawan, 2020). This learning system has been around since late 1900s and has resurfaced to be one of the necessities in the education system due to the COVID-19 pandemic. With the revolution of the internet and technologies, online learning has become a popular and easy study tool among the newer generations. Ayu (2020) stated that online learning allows more flexibility in learning and students' have found it easier for them to access materials according to their needs. In addition to that, several studies also mentioned that these technologies can help students to interact, ask questions easily to their instructors (Carrillo & Flores, 2020; Soepriyatna & Pangaribuan, 2022), create a collaborative and interactive learning environment between students (Dhawan, 2020), and provide opportunities for instructors to teach and students to learn in innovative ways (Pokhrel, 2021).

Satisfaction

There are several aspects that play a big role in students' academic performance through online learning systems, and satisfaction is one of them. Satisfaction itself means the happy and satisfied or displeasing and disappointed feeling of an individual as a result of a comparison between their perceptions and experiences of the service quality to their expectations (Basith et al., 2020; Alif et al., 2018). Previous studies have highlighted the crucial role of students'

satisfaction in determining online learning success, as well as their academic performance (Gopal et al., 2021; She et al., 2021; Carrillo & Flores, 2020). However, before achieving the success of both online learning and academic performance, in order to reach high-level of satisfaction, the online learning system must also offer a high-quality service (Suryani, 2021). Gopal et al. (2021) stated that the instructor's facilitating role, continuity of education programs improvement, and efficient course design are the key factors that affect the level of students' satisfaction.

Academic Performance

Number of studies have been carried out in the area of students' academic performance during the pandemic, where online learning is required (Mandasari, 2020; Clark et al., 2021; Wang et al., 2022; Mohammed et al., 2022; Hamdan & Amorri, 2022). Mandasari (2020) studied the factors and impacts of online learning on students' academic performance, as well as students' perception toward online learning, where the result shows that online learning does have positive impacts on students' academic performance. Similarly, Clark et al. (2021) who examined the causal effect of online learning on students' academic performance, also stated that online learning has a positive effect on students' performance. Wang et al. (2022) investigated whether online learning readiness and students' emotional competence contribute to their academic performance; result suggests that both readiness and emotional competence have a significant effect on students' academic performance. Mohammed et al. (2022) examined the positive impacts of online learning, such as offering more flexibility and interactive way of learning, as well as the negative impacts of it, including lots of distraction and social isolation. Likewise, Hamdan and Amorri (2022) explored the impact of online learning on academic performance; the result suggests that online learning positively impacts students' academic performance, where it provides tremendously learning potentialities for students.

Hypotheses Development

The present study examines the relationship between students' motivation, online learning, satisfaction, and academic performance. These variables have been selected based on the literature review and findings of the past studies mentioned above. The conceptual framework and hypotheses stemming for this research are presented in Figure 1.

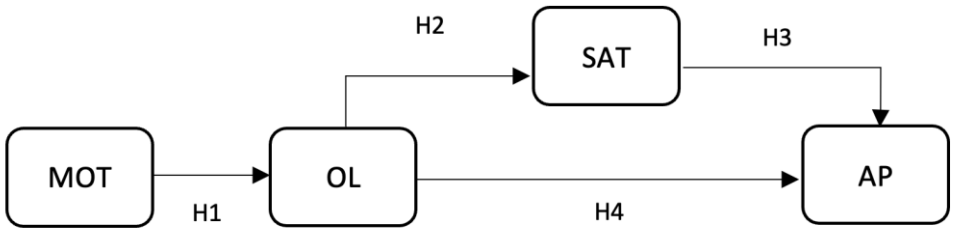

Figure 1 Hypothetical Model

Motivation and Online Learning

Through qualitative research, Gustiani (2020) found that both types of motivation have an influence on students' online learning, with intrinsic motivation making a greater positive impact than its counterpart. Additionally, a quantitative study utilizing path analysis on high school students in Purwakarta also discovered that motivation has a positive effect on online learning, where students with higher motivation achieve a more favorable learning outcome than students who are not motivated (Septiadi et al., 2021). Intriguingly, a study on university students in the United States by Stark (2019) also reported that motivation plays a significant role in predicting the success of online learning, except it observed a negative correlation between intrinsic motivation and online learning outcomes. Despite the inconsistent results from past researches on the relationship between motivation and online learning, it can be hypothesized that:

Hypothesis 1 (H1): Students' level of motivation positively affects online learning.

Online Learning and Satisfaction

Gopal et al. (2021) conducted a quantitative study on university students in India and the results reveal that well-designed online courses maximizes optimistic emotions, suggesting a positive effect on student satisfaction. A quantitative research on STKIP students in Singkawang also found that on average, the implemented online learning methods during COVID-19 is highly satisfactory for students because they are technologically literate (Basith et al., 2020). In addition to that, an empirical analysis on more than 10,000 higher education students in 10 different countries showed that online learning quality positively influences perceived student satisfaction, with students who are pleased with the quality of their online learning experience reporting more satisfaction with their education (Keržič et al., 2021). Considering the consistent results of past research regarding the correlation between online learning and satisfaction, the following hypothesis is developed:

Hypothesis 2 (H2): Online learning positively affects students' level of satisfaction.

Satisfaction and Academic Performance

In the existing studies that investigated the impact of students' satisfaction on their academic performance, the results suggested that there is a positive relationship between the two variables (Alqurashi, 2019; Basith et al., 2020; Gopal et al., 2021). The same study by Basith et al. (2020) as previously mentioned also found that the relationship between satisfaction and academic performance is positively significant, where students are more driven to do well and achieve success due to their higher level of satisfaction. This finding is in line with Gopal et al. (2021) supported hypothesis, stating that according to the result found from students studying management and hotel management courses, their level of satisfaction has a positive impact on students' performance or achievement. Furthermore, Alqurashi (2019) also emphasized how students' satisfaction is closely associated with academic performance, with online learning self-efficiency as the most significant factor of it. Therefore, it can be hypothesized that:

Hypothesis 3 (H3): Students' level of satisfaction positively affects students' academic performance.

Online Learning and Academic Performance

Clark et al. (2021) previously examined the causal effect of online learning methods on students' academic performance using data from Middle Schools in China, where the study highlighted that online learning resources are highly beneficial and have a large positive effect on students' exam scores. In addition to that, a study done by Hamdan & Amorri (2022) in one of universities in Arab also shows how beneficial online learning is for students and how it tremendously impacts their academic performance and achievements. Mandasari (2020) conducted a research in one of universities in Indonesia, also in identifying the impact of online learning toward students' academic performance, and the study suggests that it does have a positive impact on students' academic performance in terms of learning motivation, engagement, and achievement. Thus, based on the result of the previous studies, the following hypothesis is presented:

Hypothesis 4 (H4): Online learning method positively affects students' academic performance.

3. METHODOLOGY

Demographic Analysis

This study was conducted in the last week of October 2022 and the first week of November 2022 in Indonesia. The data of this research was collected conveniently using a non-probabilistic sampling technique and a quantitative method was utilized for the research. The

population analyzed were students who have engaged in and experienced online learning during their studies. To collect the required sample, an online survey through Google Forms was distributed and the respondents voluntarily participated without the offer of any incentives. Following Green's proposed procedure requiring a minimum sample size of $N \geq 50+8m$ (where m is the number of variables in the model), this research requires a minimum of 50+8(4) or 82 samples for the regression analysis (Memon et al., 2020). The sample gathered is composed of female (80.9%) and male (19.1%) middle school (2.7%), high school (7.3%), and university students (90%) who are majoring in management (31.4%), computer science (6.7%), communications (6.7%) education (5.7%) and a variety of other majors (49.5%). Moreover, the participants are currently residing in the capital city of Jakarta (71.8%) and other parts of Indonesia (28.2%) and have been studying remotely for less than 1 year (5.7%), 1 year (9.4%), 2 years (69.8%), 3 years (12.3%), or more than 3 years (2.8%). Out of 110 of the questionnaire responses, 5 were deemed invalid because they did not pass the screening question of "Have you ever done online learning?", resulting in a response rate of 95.5%.

Scale Measurement

The actual questionnaire is made up of six items pertaining to motivation, five items pertaining to online learning, five items pertaining to satisfaction, and five items pertaining to academic motivation, for a total of 21 items. Each item is measured using a five-point Likert scale to determine the level of agreement the respondents feel towards the survey items, ranging from 1 = strongly disagree to 5 = strongly agree. Questionnaire items regarding motivation were adopted from Fowler (2018), items regarding online learning were adopted from Dziuban et al. (2015), items regarding satisfaction were adopted from Dhaqane and Afrah (2016) and Gopal et al. (2021), and items regarding academic performance were adopted from Gopal et al. (2021). A face validation test was performed before distributing the final version of the questionnaire and the three judges invited conveyed that the survey items were comprehensible and sufficient for analysis. After all the samples were collected, the derived data was analyzed using Smart-PLS Professional version 3 application.

4. RESULTS AND DISCUSSION

Reliability and Validity Measurement

After the data collection stage, an initial round of confirmatory factor analysis (CFA) was performed in SmartPLS to measure the validity and reliability of the data and find potential problematic items. From the original pool of 21 items, five were deemed invalid and omitted: MOT3, I choose assignments that I can learn from even if they don't guarantee a good grade;

MOT4, Getting a good grade is the most satisfying thing for me; MOT5, The most important thing for me is to improve my overall grade point average, so my concern is getting a good grade; SAT2, Overall, I am satisfied with the quality of the course design; and SAT3, Overall, I am satisfied with the quality of the lecturers) to refine the model. The final list of items can be found in Table 1.

Table 1 Construct Reliability and Validity

Constructs (Items)		**Indicator Loadings**	**Alpha**	**AVE**
Academic Performance			0.775	0.543
AP1	Online classes have sharpened my analytic skills.	0.840		
AP2	Online classes make me feel more confident about tackling unfamiliar problems.	0.775		
AP3	Online classes have improved my written communication skills.	0.785		
AP4	Online classes have improved my understanding of educational statistics.	0.795		
AP5	Generally, my grades are better during online learning.	0.402		
Motivation			0.626	0.592
MOT1	I prefer material that really challenges me, so I can learn new things.	0.886		
MOT2	I prefer material that arouses my curiosity, even if it's difficult to learn.	0.858		
MOT6	I want to do well in my classes because it's important to show my ability to my family, friends, employer, or others.	0.506		
Online Learning			0.755	0.512
OL1	Generally, I am more engaged in my online courses.	0.535		
OL2	I have more opportunities to reflect on what I have learned in online courses.	0.710		
OL3	Online learning helps me understand course material.	0.813		

OL4	I can manage my own learning better in online courses.	0.618		
OL5	I can more easily monitor my academic progress in online courses.	0.854		
Satisfaction			0.579	0.554
SAT1	The university or school provides students with efficient services.	0.334		
SAT4	I think the online classes were valuable.	0.876		
SAT5	I think online learning is the best learning experience I have ever had.	0.885		

Indicator loadings is an acceptable measure for reliability because it indicates how much the construction explains the variance of the indicator, with 0.32 being the lowest suggested loadings value and 0.7 or above being a satisfactory value (Purwanto & Sudargini, 2021; Kilic et al., 2020). As shown in Table 1, all factor loadings values are above the minimum value of 0.32, with many even exceeding the satisfactory level of 0.7. Meanwhile, Cronbach's alpha is used as a measure of internal consistency (Lai, 2018). Although the standard benchmark for the Cronbach's alpha is $\alpha > 0.7$, lower alpha values are acceptable, with values above 0.5 still considered to be of moderate reliability (Ekolu & Quainoo, 2019). The cronbach's alpha of our four constructs appear to be above the recommended cut-off point of 0.5. Alternatively, the average extracted variance (AVE) is used to measure convergent validity and a value of 0.5 or over is satisfactory, demonstrating that the construct explains at least 50 percent of the variance of the items (Purwanto & Sudargini, 2021). All the AVE values of this research are shown to be above the satisfactory value of 0.5. Collectively, the values of indicator loadings, Cronbach's alpha, and AVE exhibited in Table 1 indicate that the remaining constructs are reliable and valid.

Table 2. Collinearity Statistics (VIF)

AP1	AP2	AP3	AP4	AP5	MOT1	MOT2	MOT3
1.974	1.684	1.753	1.755	1.132	1.900	1.911	1.047

OL1	OL2	OL3	OL4	OL5	SAT1	SAT4	SAT5
1.232	1.422	1.698	1.350	1.886	1.063	1.579	1.508

Multicollinearity and Model Summary

Variance inflation factor (VIF) method was done to test the multicollinearity among the variables and the results are presented in Table 2. It can be seen that all of the VIF values are below 5, showing that the variables used in this study do not indicate any multicollinearity problem and are acceptable (Akinwande et al., 2015). Aside from that, we also evaluated the inner model testing using R-Square for dependent variables to measure the levels of varieties of the independent variables to the dependent variables, which can be observed in Table 3. In this study, the R-Square (R^2) score for academic performance variable is 0.592, meaning that the changing effect of academic performance can be explained by online learning and satisfaction for 59.2%, where the rest can be explained by other variables outside the model that is used in this study. Next, the R^2 score for the online learning variable is 0.301, indicating that the changing effect of this dependent variable can be explained by motivation for 30.1%, and the rest can be explained by other variables outside the model that is used in this study. Lastly, the R^2 score for the satisfaction variable is 0.531, which means that the changing effect of level of satisfaction can be explained for 53.1%, where the rest can be explained by other variables outside the model that is used in this study. All of the R^2 scores fall between 0.3-0.6, suggesting that all the dependent variables are acceptable, with most of the independent variables are statistically significant (Ozili, 2022).

Table 3 R-Square

	R^2	R^2 Adjusted
Academic Performance	0.592	0.583
Online Learning	0.301	0.294
Satisfaction	0.531	0.526

Hypothesis Testing

The hypothesis testing was done by using multiple regression analysis using Smart-PLS version 3, where we performed a bootstrapping analysis, specifying a 95% significance level, to obtain the beta, t-statistics, and p-values of each path. The result of the hypothesis testing can be found in Table 4. First hypothesis shows that path coefficient score of motivation variable to online learning has a positive effect (β = 0.548; *t*-statistic = 7.127; *p*-value = 0.000), which means motivation has a positive significant influence on online learning. Second hypothesis with the results of Partial Least Square shows that path coefficient score of online learning variable to level of satisfaction has a positive effect (β = 0.728; *t*-statistic = 14.222; *p*-

value = 0.000), which means online learning has a positive significant influence on students' level of satisfaction. Third hypothesis shows that path coefficient score of satisfaction variable to academic performance has a positive effect (β = 0.517; *t*-statistic = 5.973; *p*-value = 0.000), which means students' satisfaction has a positive significant influence on academic performance. Fourth hypothesis or last hypothesis of Partial Least Square shows that path coefficient score of online learning variable to academic performance also has a positive effect (β = 0.306; *t*-statistic = 3.766; *p*-value = 0.000), which means online learning has a positive significant influence on students' academic performance.

Table 4 Path Coefficients

Hypothesis	Path	beta	t-statistics	p-value
H1	Motivation → Online Learning	0.548	7.127	0.000
H2	Online Learning → Satisfaction	0.728	14.222	0.000
H3	Satisfaction → Academic Performance	0.517	5.973	0.000
H4	Online Learning → Academic Performance	0.306	3.766	0.000

In this study, there are two mediating variables, resulting in four paths shown in Table 5. The mediation or indirect effect of online learning on the relationship between motivation to academic performance and satisfaction are positive due to the positive beta, *t*-statistics, and *p*-value, which means these indirect effects are significant. Similarly, the mediation effect of satisfaction on the relationship between online learning and academic performance is also positive (β = 0.377; *t*-statistic = 5.458; *p*-value = 0.000), meaning that this indirect effect is significant. Finally, the mediation effect of online learning and satisfaction on the relationship between motivation and academic performance is positive (β = 0.207; *t*-statistic = 4.258; *p*-value = 0.000), which means that this indirect effect is significant. These findings prove that all of the mediating variables applied in this study are significant.

Discussion

The present study intends to build on the past studies by connecting four variables of motivation, online learning, satisfaction, and academic performance to see the relationship between those. We investigated which factors would lead to a better academic performance in schools and universities in Indonesia. Based on the result of the hypothesis test, all of our hypotheses are accepted, indicating that motivation, online learning, and satisfaction were found to have significantly positive direct and indirect effects on students' academic

performance. With all significant results supported by the data analysis, the findings of this study suggest that students with higher motivation can achieve better online learning outcomes and may also lead to higher levels of satisfaction and academic performance. This adds to the literature done by Gustiani (2020) and Septiadi et al. (2021) in which they only focused on the impact of motivation on online learning. Our results may imply that students with higher motivation may have the desire and eagerness to get the highest score and best outcomes possible, compared to the ones with lower level of motivation. Furthermore, our major finding of this study is the impact of online learning on students' satisfaction that plays the biggest role in the relationship between motivation and academic performance, as it has the highest beta and *t*-statistic. Those who are pleased with their online learning experience, as a result of great quality of services, lecturers, and/or for the reason that younger people are more technology savvy, would eventually lead to a higher level of satisfaction.

Table 5 Specific Indirect Effects

Path	beta	t-statistics	p-value
Motivation → Online Learning → Academic Performance	0.168	2.924	0.004
Online Learning → Satisfaction → Academic Performance	0.377	5.458	0.000
Motivation → Online Learning → Satisfaction	0.399	5.811	0.000
Motivation → Online Learning → Satisfaction → Academic Performance	0.207	4.258	0.000

5. CONCLUSION

Online learning has been a common and popular topic in the past two to three years as it became a necessity for schools and universities to shift from traditional face-to-face learning to online learning method due to the COVID-19 pandemic. Along with other research, this study aims to observe the playing factors in the dependent variable, which is students' academic performance, and three independent variables (motivation, online learning, and satisfaction) were selected. From the proposed framework model, it can be concluded that all three variables have a positive and significant impact on academic performance. This study also serves several important implications, especially for schools and universities to establish upright and efficient policies, as well as services in their online learning method. For students to receive higher grades and better academic performance, as suggested in our research, motivation, online

learning success, and satisfaction need to be fulfilled beforehand. The higher the motivation is, the higher the possibility of online learning success, leading to a higher level of satisfaction, resulting in a more satisfactory academic performance. Schools and universities are recommended to provide high-quality services, materials, and lecturers for students to develop their own motivation and capability, and be satisfied with it, wherein teachers and lecturers are recommended to create more engaging, interactive, and efficient discussions and course design, to help students to improve their educational, communication, and analytical skills. Moreover, through hypothesis testing, it can be observed that the path from online learning to satisfaction shows the highest beta out of all, indicating that this, particularly, needs to be prioritized. With these improvements, students will be more interactive, upgrade their skills, gain knowledge, and will eventually benefit their academic performances.

As with all other research, this study has several caveats that can be improved for future research. For instance, the data collected was cross-sectional in which it would be difficult to evaluate and establish any causal relationship between the variables. A future study utilizing a longitudinal method might prove to be useful. Additionally, this research is only done on Indonesian students, mainly those currently living and pursuing their studies in Jakarta. Consequently, the result of this empirical study lacks external validity and cannot be generalized. In future research, samples from various countries could be gathered to provide a better comparative result and understanding of students' perspectives. Moreover, we should also take into consideration the fact that over 97.2% of our respondents have only studied online for 3 years or less, insinuating that their learning situation is the result of COVID-19 restrictions. Hence, their current sentiments of online learning might be affected by the unprecedented circumstance and the lack of preparation in shifting towards this mode of learning. A future study with respondents who voluntarily choose to learn online might offer a new point of view. Lastly, this study does not take into account the different learning conditions of every student and how it could possibly impact their academic performance. Some students may encounter issues like limited access to the internet and unstable connections, while others may have an unconducive family environment that may cause disturbances. In the future, researchers could incorporate other factors to the current model of this study.

REFERENCES

Akinwande, M. O., Dikko, H. G., & Samson A. (2015). Variance Inflation Factor: As a Condition for the Inclusion of Suppressor Variable(s) in Regression Analysis. Open Journal of Statistics, 5, 754-767. http://dx.doi.org/10.4236/ojs.2015.57075

Alif, M. G., Pangaribuan, C. H. & Wulandari, N. R. (2018). The Factors Affecting Customer Satisfaction, Loyalty, and Word of Mouth Towards Online Shopping for Millennials in Jakarta. Proceedings of the 5th Sebelas Maret International Conference on Business, Economics, and Social Sciences (SMICBES), 17-19 Jul 2018, Bali, Indonesia (ISBN 978-1-138-35996-3).

Alqurashi, E. (2019). Predicting student satisfaction and perceived learning within online learning environments. Distance Education, 40(1), 133-148. https://doi.org/10.1080/01587919.2018.1553562

Ayu, M. (2020). Online Learning: Leading E-Learning at Higher Education. The Journal of English
Literacy Education, 7(1), 47-54.

Basith, A., Rosmaiyadi, R., Triani, S. N., & Fitri, F. (2020). Investigation of Online Learning Satisfaction
During COVID 19: In Relation to Academic Achievement. Journal of Educational Science and
Technology, 6(3), 265-275. https://ojs.unm.ac.id/JEST/article/view/14803/9700

Behzadnia, B., Alizadeh, E., Haerens, L., & Aghdasi, M. T. (2022). Changes in students' goal pursuits and motivational regulations toward healthy behaviors during the pandemic: A self-determination theory perspective. Psychology of Sport and Exercise, 59, 102131, 1-10.

Botnaru, D., Orvis, J., Langdon, J., Niemiec, C. P., & Landge, S. M. (2021). Predicting final grades in STEM courses: A path analysis of academic motivation and course-related behavior using self-determination theory. Learning and Motivation, 74, 101723, 1-11.

Carrillo, C., & Flores, M. A. (2020). COVID-19 and teacher education: a literature review of online
teaching and learning practices. European Journal of Teacher Education, 43(4), 466-487. https://doi.org/10.1080/02619768.2020.1821184

Clark, A. E., Nong, H., Zhu, H., & Zhu, R. (2021). Compensating for academic loss: Online learning and student performance during the COVID-19 pandemic. China Economic Review, 68,
101629, 1-14. https://doi.org/10.1016/j.chieco.2021.101629

Dhaqane, M. K., & Afrah, N. A. (2016). Satisfaction of Students and Academic Performance in Benadir University. Journal of Education and Practice, 7(24), 59-63.

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. Journal of Education Technology System, 49(1), 5-22. https://doi.org/10.1177/0047239520934018

Dziuban, C., Moskal, P., Thompson, J., Kramer, L., DeCantis, G., & Hermsdorfer, A. (2015). Student satisfaction with online learning: Is it a psychological contract? Online Learning, 19(2), 1–15. https://doi.org/10.24059/olj.v19i2.496

Ekolu, S. O., & Quainoo, H. (2019). Reliability of assessments in engineering education using Cronbach's alpha, KR and split-half methods. Global Journal of Engineering Education, 21(1), 24-29.

Engzell, P., Frey A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. PNAS, 118(17), 1-7. https://doi.org/10.1073/pnas.2022376118

Fowler, S. (2018). The Motivation to Learn Online Questionnaire [Doctoral dissertation, University of Georgia]. University of Georgia Repository. https://getd.libs.uga.edu/pdfs/fowler_kevin_s_201805_phd.pd

Ghosh, S., Pulford, S., & Bloom A. J. (2022). Remote learning slightly decreased student performance in an introductory undergraduate course on climate change. Communications Earth & Environment, 3(177), 1-6. https://doi.org/10.1038/s43247-022-00506-6

Gopal, R., Singh V., & Aggarwal A. (2021). Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. Educ Inf Technol, 26,
6923–6947. https://doi.org/10.1007/s10639-021-10523-1

Gustiani, S. (2020). Students' Motivation in Online Learning During Covid-19 Pandemic Era: A Case Study. Holistics Journal, 12(2), 23-40.

Hamdan, K., & Amorri, A. (2022). The Impact of Online Learning Strategies on Students' Academic Performance. E-Learning and Digital Education in the Twenty-First Century, in E-Learning and Digital Education. In M. Mahruf C. Shohel (Ed.) The Twenty-First Century.
https://doi.org/10.5772/intechopen.94425

Keržič, D., Alex, J. K., Pamela Balbontín Alvarado, R., Bezerra, D. da, Cheraghi, M., Dobrowolska, B., Fagbamigbe, A. F., Faris, M. A. I. E., França, T., González-Fernández, B., Gonzalez-Robledo, L. M., Inasius, F., Kar, S. K., Lazányi, K., Lazăr, F., Machin-Mastromatteo, J. D., Marôco, J., Marques, B. P., Mejía-Rodríguez, O., … Aristovnik, A. (2021). Academic student satisfaction and perceived performance in the e-learning environment during the COVID-19 pandemic: Evidence across ten countries. PLOS ONE, 16(10), 1-23. https://doi.org/10.1371/journal.pone.0258807

Kilic, A., Uysal, İ., & Atar, B. (2020). Comparison of confirmatory factor analysis estimation methods on Binary Data. International Journal of Assessment Tools in Education, 7(3), 451–487. https://doi.org/10.21449/ijate.660353

Lai, P. C. (2018). Research methodology for novelty technology. Journal of Information Systems and Technology Management, 15(1), 1-17. https://doi.org/10.4301/s1807-1775201815010

Mandasari, B. (2020). The Impact of Online Learning toward Students' Academic Performance on Business Correspondence Course. Journal of Education and Technology, 4(1),
98-110. https://doi.org/10.29062/edu.v4i1.74

Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). Sample Size for Survey Research: Review and recommendations. Journal of Applied Structural Equation Modeling, 4(2), 1-20. https://doi.org/10.47263/jasem.4(2)01

Mohammed, A. M. E., Ahmed, N. O., & Mohammed, O. H. (2022). Study on the Impact of Online
Learning on Students' Academic Performance. Asian Journal of Multidisciplinary Research &
Review, 3(2), 167-183.

Nishimura, T., & Sakurai, S. (2017). Longitudinal changes in academic motivation in Japan: Self-determination theory and East Asian cultures. Journal of Applied Developmental Psychology, 48, 42–48. https://doi.org/10.1016/j.appdev.2016.11.004

Ozili, P. K. (2022). The Acceptable R-Square in Empirical Modelling for Social Science Research. SSRN Electronic Journal. http://dx.doi.org/10.2139/ssrn.4128165

Pokhrel, S., & Chhetri, R. (2021). A Literature Review on Impact of COVID-19 Pandemic on Teaching and Learning. Higher Education for the Future, 8(1), 133-141. https://doi.org/10.1177/2347631120983481

Purwanto, A., & Sudargini, Y. (2021). Partial Least Squares Structural Squation Modeling (PLS-SEM) Analysis for Social and Management Research: A Literature Review. Journal of Industrial Engineering & Management Research, 2(4), 114-123. https://doi.org/10.7777/jiemar.v2i4

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and New Directions. Contemporary Educational Psychology, 25(1), 54–67.

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and Future Directions. Contemporary Educational Psychology, 61, 101860, 1-11. https://doi.org/10.1016/j.cedpsych.2020.101860

Selvaraj, A., Vishnu, R., KA, Nithin, Benson, N., & Mathew, A. J. (2021). Effect of pandemic based
online education on teaching and learning system. International Journal of Education Development, 85, 102444, 1-11. https://doi.org/10.1016/j.ijedudev.2021.102444

Septiadi, G., Dliss, F., & Sukur, A. (2021). The effect of online learning and student motivation during the COVID-19 pandemic. Gladi: Jurnal Ilmu Keolahragaan, 12(01), 62–72.

She, L., Ma, L., Jan, A., Nia, H. S., & Rahmatpour, P. (2021). Online Learning Satisfaction During
COVID-19 Pandemic Among Chinese University Students: The Serial Mediation Model. Frontiers in Psychology, 12, 743936, 1-12. https://doi.org/10.3389/fpsyg.2021.743936

Soepriyatna & Pangaribuan, C. H. (2022). The Direct and Indirect Influence of Gamification on Learning Engagement: The Importance of Learning Goal Orientation (A Preliminary Study). International Journal of Information Engineering and Electronic Business (IJIEEB), 14(4), 39-46.

Stark, E. (2019). Examining the role of motivation and learning strategies in the success of online vs. face-to-face students. Online Learning, 23(3), 234-251. https://doi.org/10.24059/olj.v23i3.1556

Suryani, N. K., & Sugianingrat, I. A. P. W. (2021). Student E-Learning Satisfaction During TheCovid-19
Pandemic in Bali, Indonesia. Jurnal Economia, 17(1), 141-151.

Sutter, C. C., & Campbell, L. O. (2022). The role of academic self-determined reading motivation, reading self-concept, home reading environment, and student reading behavior in reading achievement among American Indian and Hispanic students. Contemporary Educational Psychology, 70, 102093, 1-12. https://doi.org/10.1016/j.cedpsych.2022.102093

Wang, Y., Xia, M., Guo, W., Xu, F., & Zhao, Y. (2022). Academic performance under COVID-19: The
role of online learning readiness and emotional competence. Current Psychology, 42, 30562-30575.

WHO Coronavirus (COVID-19) Dashboard. (n.d.). WHO. https://covid19.who.int/

Zalat, M. M., Hamed, M. S., & Bolbol, S. A. (2021). The experiences, challenges, and acceptance of e-learning as a tool for teaching during the COVID-19 pandemic among university medical staff. PLoS ONE, 16(3), 1-12. https://doi.org/10.1371/journal.pone.0248758