Study of online learning for accounting subjects in vocational schools during the pandemic period

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Article Info

ABSTRACT

Since COVID-19 pandemic has changed the way people conduct things, including educational activities, online learning has become a necessity that schools must adopt. This study aims to analyze the relationship of various variables that affect the success of online learning in accounting subjects in vocational high. This study is a quantitative cross-sectional online survey with 308 respondents from 26 schools in North Sumatra, Indonesia. Data analysis was performed through regression analysis with moderating variables. It concluded that the success of online learning process as measured by Learning Satisfaction was influenced by Student Characteristics, Learning Accessibility, and Textbooks, while Multimedia Materials and other Text Materials did not have any effect. It further observed that teacher Support does not affect learning satisfaction but can moderate the relationship between student characteristics and textbook quality. This means that all related parties need to focus on changing students' mindset, improving the quality of textbooks, and increasing accessibility. On the other hand, to increase success, it is necessary to strengthen the role of teachers.

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Introduction

At the end of the third industrial revolution, internet innovation became the starting point for the fourth industrial revolution. Simultaneously, the world entered an era of technological disruption that affected all facets of life. Only institutions that can work efficiently through the use of technology will win the competition, and there's no gainsaying that, educational institutions must also adopt technology in the process. These changes do not only impart graduates' skills and learning substance significantly, but also change how the learning process is performed. However, the problem lies in the inability of education to adopt technology in the learning process. Unfortunately, when educational institutions are poorly to respond effectively to technology innovations, the world faces pandemics like Covid-19.

The use of technology has changed how everyone conducts his/her activities, including schooling, and there have been various improvements in the educational process. Many researchers are involved in studying and discussing how this occurs and influences many aspects. One of the consequences of educational technology disruption is increased online learning. Online learning research has been conducted since the

1990s. However, since the focus of this study is on the phenomenon of online learning during the COVID-19 pandemic, we decided to focus on post-COVID-19 research.

Although most educational institutions were not ready for it, the Covid-19 outbreak is forcing educational institutions to adopt technology. This condition occurs almost all over the world, including Indonesia. On the one hand, the rapid development of online learning infrastructure, such as mobile devices and internet networks, enables an effective online learning experience (Hanif & Sunardi, 2018). However, most Indonesian schools had several difficulties in implementing the online learning process. Therefore, it is necessary to understand the factors driving and inhibiting factors for effective online learning.

Along with the pandemic against Indonesia, the government changed focus in its education development strategy. Currently, government focused on improving vocational education as a response to the problem of educational relevance to industry requirements. At the secondary school level, vocational education in Indonesia is carried out in Sekolah Menengah Kejuruan (SMK). Changes in education policy strategies, shifting trends in online learning, and the Covid-19 outbreak motivated us to study online learning during the COVID-19 pandemic in SMK. We are especially interested in researching the accounting learning process because it has specific characteristics. Accounting learning process requires student engagement in a relatively detailed learning process.

Pandemics are usually seen as problematic, causing serious problems. Mhlanga concludes that pandemics also generate opportunities (Mhlanga, 2020). However, the ability to properly use technology is what determines whether this opportunity will be a success or a failure. Mhlanga's research may warn Indonesia of the relatively limited ability of teachers and students to use technology. Besides these technical challenges, another factor that affects online learning success is student characteristics. Wong's research concluded that the autonomy and motivation of students would determine the effectiveness of the online learning process (Wong. R, 2020). We also believe that student characteristics would also affect Indonesia's online learning success. Herrador-Alcaide's study examines accounting learning carried out online. The results show that student characteristics determine their response to online learning (Herrador & Hernandez, 2020) and to their views of teachers' roles.

During the Covid-19 pandemic, many stakeholders in Indonesia claimed that limited access was a significant obstacle to online learning. This followed numerous research findings that were done not only in developing countries like Indonesia, but also across the world. Morgan's research in the U.S. showed that some students faced internet connectivity issues (Morgan, 2020). Internet devices and connectivity restricted usability. Their research concluded that students with limited accessibility experienced significant online learning implementation losses (Morgan, 2020). One of the most important requirements of school is learning materials. In Indonesia, most schools require students to have textbooks in the conventional face-to-face learning process, while online learning uses modules. Malan's research in accounting higher education concluded that if students are interested in the modules that they have, online learning effectiveness would increase (Malan, 2020). The learning media characteristics was used to categorize learning media into three types; textbooks, text-only learning media, and interactive learning media.

One factor that is often discussed in the online learning era is teacher. This is because a teacher's role is different in online learning. Research by Leacock and Mouchantaf concluded that the teacher's readiness to enhance online learning performance is necessary (Leacock, Warrican, & Mouchantaf, 2020). Theoretically, a teacher should be a factor that improves the relationship between various other factors that influence learning success. The Maulana's research results in six countries; Netherlands, South Korea, South Africa, Indonesia, Hong Kong-China, and Pakistan put Indonesian teachers' teaching behavior at the bottom of the six countries (Maulana, Andre, dkk, 2020). Based on the above explanation, we believe that, student characteristics, learning accessibility, and learning materials will affect online learning process. We also believe that teachers play an important role in strengthening the relationship between these variables. In Indonesia, Pratolo (2021) suggests the need to develop teachers' technical facilities, technological pedagogy, and policy makers to give digital literacy more attention (Tartavulea, Albu, dkk, 2020), likewise in several countries abroad (Partolo, 2021).

We agree that the best measure needed to determine learning process effectiveness is learning outcomes. However, the process of assessing learning outcomes during the pandemic has low validity, thus this research will evaluate the effectiveness of online learning by student satisfaction. We assume that student satisfaction is a proxy that can measure learning process effectiveness. We completely understand that these proxies are really not perfect, but they're still the best alternative.

This work is beneficial because the huge leaps in online learning since the Covid-19 pandemic will continue even though the pandemic has been overcome. The Tartavulea research on accounting higher education in 13

European countries concluded that online learning made a huge impact during the Covid-19 pandemic and so it will continue to be implemented (Oluwalola, 2021). We also agree that the results of Kong and Xue's research on the success of the online learning process are decided mainly by collaboration between different parties (Kong, Xue, Shang ; 2020). Therefore, we hope that this research will explain an appropriate online learning framework for policy makers.

Based on the explanation above, schools need to implement appropriate online learning process strategies and policies. This is also necessary because learning using technology will encourage students to learn more learning resources independently. Schools and educational policy makers need to identify factors that will aid their online learning success. This is what motivated us to conduct empirical studies that will help us to understand the various factors affecting the success of the online learning process.

We assumed that an effective online learning process should precede student satisfaction during learning process. This research did not directly evaluate the learning outcomes as it obtained feedback from several stakeholders on the distortions of the evaluation process during the pandemic's early days. Therefore, this study will concentrate on student satisfaction in learning.

Method

We modified a quantitative cross-sectional online survey to perform this analysis. The questionnaire was designed to be completed by accounting-major vocational school students via an online survey platform. The data collection phase of the survey was conducted in August 2020, to analyze the learning process from March to July 2020. During that time, all schools in Indonesia implemented Study From Home (SFH). We successfully surveyed 325 students from 29 schools in North Sumatra, Indonesia. After identifying the completeness of the questionnaire, the data that could be used for the next analysis phase were taken from 308 respondents from 26 schools. Figure 1 demonstrates the relationship model that we tested.

The questionnaire we developed modifies Madina and Farhan's questionnaire (Madina, 2020 ; Farhan, Talib, dkk, 2019). The questionnaire has 36 items, divided into 7 sections. Respondents were asked to choose one-point Likert scale from one to five depending on their online learning conditions. Table 1 shows the description of variables and questionnaires used. STROBE guidelines were used as the basis for writing in this study (Von Elm, Egger, dkk ; 2008). Research publications have received permission from the school, teachers, ad students involved in this research. All data available at doi.org/10.5281/zenodo.4500822, this dataset contains the following data:

This dataset contains the following data: 1) Questionnaire; 2) Raw Questionnaire Respons Data; and 3) STROBE checklist cross-sectional. Data are available under the terms of the Creative Commons Attribution 4.0 International.
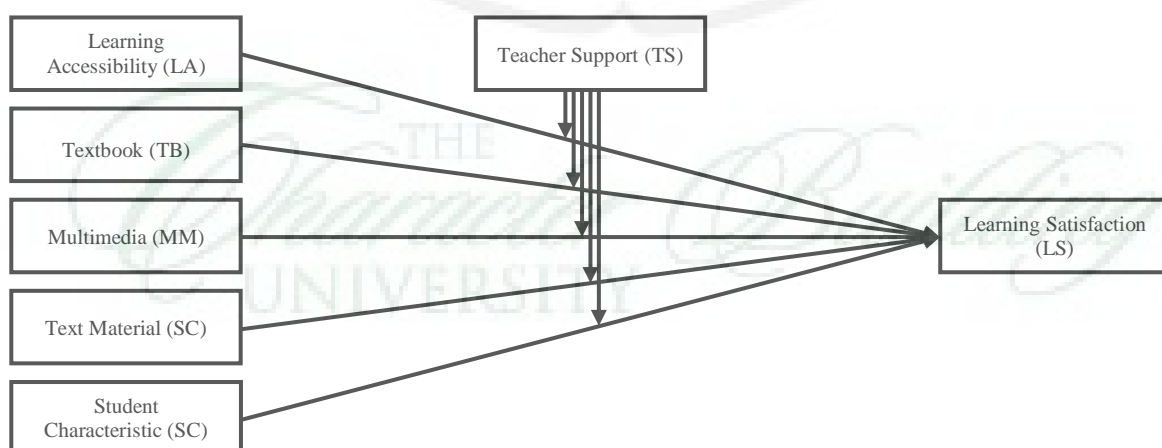

Figure 1. Conceptual Framework

Results and Discussions

Before testing the relationship between variables, we analyzed the descriptions of the data that we obtained and that is summarized in Table 2 mathematically, the minimum value is obtained when a respondent gives a value of "one" for all items, while the maximum value is obtained when the respondent gives a value of "five"

for all items. All variables have extreme minimum and maximum values from respondents who give "one" or "five" points for all items in one variable. This shows that the distribution of respondent responses is quite varied. Based on the correlation coefficient value calculation, the learning satisfaction variable is the variable with the biggest variety, while the three learning material variables have the same coefficient of variation.

Table 1. Variable Description

Variable	Description
Student Characteristic (SC)	SC measures the characteristics of student enthusiasm and constructive online learning perspective.
Learning Accessibility (LA)	LA is used to measure students' condition or ability to access online learning on both device and connection side.
Textbook (TB)	TB is used to measure the quality of online learning books used.
Multimedia Material (MM)	MM is used to measure the multimedia learning materials used in online learning.
Text Material (TM)	TM is used to measure the quality of text-learning material other than textbooks.
Teacher Support (TS)	TS is used to measure students' perceptions of the effectiveness of teacher support in online learning.
Learning Satisfaction (LS)	LS is used to measure student satisfaction in online learning.

Validity and reliability testing are carried out to ensure that the data obtained can be used later, while testing the relationship between variables with moderating variables and the type of moderation that occurs with SmartPLS. The test results are shown in table 3. Based on the results of the data analysis performed, the results obtained by this study are generally consistent with the studies conducted by other researchers. Student Characteristics (SC), Learning Accessibility (LA) and Textbook (TB) have a direct effect on Learning Satisfaction (LS).

Table 2. Descriptive Statistics

Variable	Item	Min.	Max.	Average	Standard Deviation	Coefficient of Variance
Student Characteristic (SC)	7	7	30	16.10	4.26	0.26
Learning Accessibility (LA)	4	4	20	11.55	2.65	0.23
Textbook (TB)	4	4	20	12.97	2.53	0.20
Multimedia Material (MM)	4	4	20	13.31	2.71	0.20
Text Material (TM)	4	4	20	13.11	2.63	0.20
Teacher Support (TS)	8	12	40	28.05	6.28	0.22
Learning Satisfaction (LS)	5	5	24	13.09	3.81	0.29

According to Wong's research (Wong, 2021), student characteristics affect the success of the online learning process. Students who see online learning as a challenge and who believes that the change is something positive are more satisfied with the online learning process. SC-LS has a relatively strong relationship significance value (p-value: 0,000), with a relatively large path coefficient (0.421). This finding is necessary for policy makers to realize that the most important thing to do is to change students' mindsets. Changing their mindsets to see online learning as a challenge will enhance the effectiveness of the learning process, and help students to actively overcome various obstacles.

Table 3. Relationship Test Results Summary

No	Relation	Sig.	Loading Factor	Type of Moderation
1	SC->LS	0.000*	0.421	-
2	LA->LS	0.000*	0.217	-
3	TB->LS	0.039*	0.146	-
4	MM->LS	0.216	0.091	-
5	TM->LS	0.449	0.075	-
6	TS->LS	0.230	0.065	-
7	TS x SC->LS	0.064**	-0.086	Potensial**/ Pure*
8	TSxLA->LS	0.296	-0.047	Potensial

No	Relation	Sig.	Loading Factor	Type of Moderation
9	TSxTB->LS	0.046*	0.115	Pure
10	TSxMM->LS	0.635	-0.032	-
11	TSxTM->LS	0.772	0.019	-

*	: Sig at 5%
**	: Sig at 10%

Like other studies such as Morgan, Leacock, and Mouchantaf (Morgan, 2021), this research also confirms that accessibility is also a factor that affects online learning satisfaction. Although smaller than the SC-LS relationship, path coefficient is relatively high (0.217). These findings suggest that while student characteristics and learning accessibility are two aspects that significantly influence learning process performance, student characteristics is the most important factor to consider. This is slightly different from the public believe which states that learning accessibility is the most important factor in online learning.

Out of the three learning materials that we studied, only textbooks that have a significant influence on learning satisfaction. Students with better textbooks will relatively enforce online learning. Whereas the survey conducted through textbook ownership during the pandemic was just about 20%. These findings suggest that students are much more comfortable using textbooks in a face-to-face learning process. Therefore, we recommend that the government should attempt to provide online learning textbooks for all students. The government should have free accounting subject ebooks. Based on these research findings, we are currently compiling a free to share accounting ebook for SMK.

Based on our study on the insignificant effect of multimedia materials, we observed that teachers only use internet multimedia materials which are not designed to be incorporated with the curriculum. We know that creating multimedia materials is still difficult. Therefore, we do not suggest the use of multimedia materials to support online learning efficiency in the short term. Contrary to what we predicted, other text materials such as modules, do not affect the online learning process. This is contrary to Malan's research, which concluded that modules are the most influential online learning materials in an online learning process (Malan, 2020). This is also contrary to the fact that most Indonesian schools use modules as part of the online learning process. Based on discussions that we had with a group of students, the contents of the modules were still very limited. The modules' limited quality resulted from the hurried compilation process brought about by the COVID-19 pandemic's sudden emergence and disturbance of the learning process. Therefore, we suggest the use of textbooks rather than the use of modules that are not well-planned.

We also examined the variable of Teacher Support (TS) on student satisfaction in the learning process, and we had results that we didn't expect. We observed that teacher support is not a factor that affects student satisfaction during online learning. These findings reminded us of Maulana's research results, which placed the quality of teachers' behavior in Indonesia at the bottom of the six countries that were observed (Maulana, 2020). We also suspected that according to Mhlanga's research, one of the factors is the limited mastery of online learning supporting technology.

However, our findings weren't absolutely surprising. Although at a significance level of 0.064 (<0.10), the teacher support may still be a variable that moderates the effect of student characteristics on learning satisfaction. This means that if students have enthusiastic characteristics and view online learning as positive, the role of the teacher can also strengthen this relationship. Teacher support as a moderating variable also influences the relationship that textbooks have with learning satisfaction. This means that if students have good textbooks, teachers' impact will increase as success will be enhanced in the online learning process.

Based on these test results, we see the high potential roles that teachers perform in the online learning process. Teachers must conduct an online learning process combined with good textbooks. This implementation allows students to learn personally from textbook that they can read and understand, as they embark on their face-to-face online sessions. In addition, the teachers may also allocate time to positively enhance their mindsets or encourage positive student thinking in them, as they proceed with their online learning process.

Conclusions

We conclude and recommend the following points: Based on the significant influence of student characteristics on learning satisfaction, the teachers must encourage a change of mindset in students during the learning process, so as to be motivated enough to see the online learning process as a challenge. Schools, governments, and related parties should also encourage this campaign that the online learning process is an

effective and efficient learning process that can achieve learning outcomes as well and even better than the conventional face-to-face learning process. While the government's efforts to provide internet access for all Indonesian students has began to show positive results, the government must continue to ensure that this will continue after the pandemic ends. This must be performed because online learning remains part of the learning process known as blended learning. Due to the significant impact of textbooks in the online learning process, we suggest that all stakeholders should design strategic steps to create suitable online learning textbooks. To ensure this strategy's effectiveness, the textbook should be in the form of ebook and should be made free to share and use. The proven role of teachers in strengthening the relationship between student characteristics and textbooks in the success of the learning process makes us to recommend that the teachers should be well trained to take on their responsibilities, since this will enhance their abilities to motivate students in the online learning process and to use technology that supports adequate online learning.

Acknowledgments

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