The influence of online learning platform models during the COVID-19 outbreak on college student satisfaction levels in Southeast Sulawesi

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Abstract. During the COVID-19 outbreak, we had to do physical distancing, so that all universities in Indonesia conducted online class programs. This research focuses on the segmentation of college student assessment in choosing online learning platforms and in the context of their satisfaction. An empirical survey was conducted on 295 college students who were taught using various online learning platforms through online surveys. The results showed the selection and use of learning platforms significantly influence the level of college student satisfaction. The use of online learning platforms with a combination of Zoom + Google Classroom + WhatsApp application (model 1) becomes a very dominant choice used by college students in online learning when compared to other models

1. Introduction

In mid-May 2020, Coronavirus (COVID-19) spread rapidly throughout the world with a total of 4,904,413 confirmed cases by the WHO and 323,412 cases of death due to COVID-19 (Source: World Health Organization, Data last updated: 5/20/21, 10:44 pm). While in Indonesia, there are as many as 20,162 confirmed cases of Covid-19 with the number of deaths being 1,278 (source: www.covid19.go.id, Last update: May 21, 2020, 16:17 WIB). This data illustrates the existence of a chain of transmission that is fast enough to make the government have to issue a super tight policy and is the toughest choice to break this chain, which is to do social distancing. Social distancing is that people are asked to avoid large gatherings or crowds of people. If we have to be around people, keep a distance from other people about 6 feet (2 meters). The social distancing context has a significant impact on all colleges in Indonesia, especially in the lecture process where all lecture activities cannot be carried out on campus, but are carried out at home and replaced with online learning.

In this regard, choosing an online learning platform can be said to be the most significant investment made by educational institutions in terms of online learning[1].Several studies on the context of e-learning platforms have been conducted by experts, including the use of the Moodle as an interactive e-learning tool to motivate students and involve them in resolving single and collaborative homework tasks. An e-learning platform is also a proper solution that helps in class management and avoids potential errors in identification of homework senders real name (as happened much time in via-email submissions)[2]; use Moodle as an LMS and empirical survey data to investigate what are the factors that influence online assessment and overall satisfaction with online learning [3]; a hybrid recommender system, MoodleRec, implemented as a plug-in of the Moodle Learning Management System [4]; e-learning platforms are seen as a plus for the student [5].

Discussing about this, the most important part of choosing an online learning platform is that it must consider at least 2 aspects, namely (1) a platform that is understood and usable and (2) a platform that can help the achievement of learning objectives. In connection with this matter, then the type of platform for online learning, in principle, is divided into three options, namely (1) learning management systems, (2) social media applications, and (3) web conferencing software. Many education institutions often use one or a combination of these [6].Related to the context of satisfaction in using online learning platforms, several criteria in choosing an online learning platform must be considered, including issues of security, performance, support, interoperability,

ease of use, management, communication tools, administration tools, course delivery tools, development content [7]. Besides, it is also necessary to consider the following matters, including: ease of use, ease of content creation, student involvement, and cost/price.[8]adds that in choosing an online learning platform it is necessary to consider criteria such as: for using communication tools, learning objects, user data management, usability, adaptation, technical aspects, administration, and course management.

Specifically, in Southeast Sulawesi, the existing conditions illustrate that the COVID-19 cases are increasingly spread across districts/cities, with a total of202 cases. Patients recovered in 25 cases. While there are 173 treatments. And died still 4 cases. In addition, cumulatively, there were 1402 OTG cases. (Source: Task Force for the Acceleration of Handling COVID-19, updated on May 21, 2020, at 17:00 WITA). Then, the whole learning process carried out by college students, especially students from Halu Oleo University, as the largest state university in the Southeast Sulawesi region, is required to go through online or network learning methods (online) in accordance with circular rector number: 02 / UN29 / RT / 2020.

The online learning policy in principle has two sides that must be considered by stakeholders. On the side that involves the advantages of online learning, such as lecturers and students will be increasingly technology literate and keep abreast of the times, learning activities are not limited to time and place, learning resources are also not limited to lecturers but from other sources, creativity and criticism of students will increasingly come out, lecturers will be more creative in combining a variety of online teaching media, lecturers are no longer burdened by manually correcting student assignments, and paper usage will be reduced because it is diverted through online applications. But on the other hand, there must be no assumptions, students feel cheated because of the many assignments given, but there is no feedback from lecturers, such as assignments or work that has been done to the maximum by students but the lecturer does not provide corrections or responses. For this reason, greetings, responses, and feedback or appreciation of the work done through online learning is something that should not be forgotten.

Another problem is the signal problem and the quota problem. This problem can be considered biased by students because there is no direct relationship with their position as students or lecturers. However, if examined further, then this obstacle actually becomes a major obstacle that impedes the learning process, even inhibits the whole process of learning activities. Starting with signal problems, it is difficult to focus on understanding the material, not being able to send assignments or take exams online. Students find it difficult to understand the material delivered by lecturers, to lecturers who have never given lecture material either by video message or video conference, it is also felt to be one of the burdens for students in undergoing online learning. In this context, the selection of learning platforms is assumed to be one of the aspects that becomes the variable that gives influence to the online learning process and provides student satisfaction.

In this article, the authors conducted a study of the effects of the use of online learning platforms on the level of college student satisfaction, by proposing a research hypothesis which states that there is an influence on the choice of online learning platform models on the level of student satisfaction in the region of southeast Sulawesi

2. Method

The data collection method in this study uses an online survey. The choice of this method is because this research took the form of a survey to find out the effect of choosing and utilizing on-line learning platforms on the satisfaction level of using these platforms in on-line learning. The survey questionnaire was sent anonymously to all students enrolled in the even semester which coincided with the COVID-19 outbreak and took courses taken care of by the research team and other fellow lecturers. The design of the survey instrument is based on the existing literature and the proposed research model through the research hypothesis as well as the measurement aspect for this research variable. One of the questionnaire packages used as a reference is a questionnaire to measure usability is PSSUQ (Post-Study System Usability Questionnaire). The Post-Study Usability Questionnaire System (PSSUQ) is a research instrument developed for use in evaluating usability at IBM. PSSUQ consists of 19 items aimed at assessing five system usability characteristics [9]. For this study, the questionnaire was adjusted to the context of this study. The

total number of students surveyed was 295 students enrolled in courses offered at both undergraduate and masters levels.

The online learning platform in this study was divided into 3 large groups before the questionnaire was made, namely (a) learning platform for meetings such as zoom, google meet, Microsoft teams, etc.; (b) platforms for managing online learning in on-line classes such as google classroom, Edmodo, edlink, Rumah belajar, class dojo, etc.; and (c) other online learning support applications such as WhatsApp, e-mail, etc. Then, from these three groups, models of online learning platforms are constructed that can be used by students when conducting the learning process. The construction of these models is presented in the following table.

Table 1. Construction of On-Line Learning Platform Models that Can Be Used by College Students

No.	Models online learning platform that is used by college student	Online learning platform used when covid-19		
		for meetings such as zoom, google meet, Microsoft Teams, etc	for managing learning in online classes such as Google Classroom, Edmodo, Edlink, RumahBelajar, Class Dojo, etc	Other online learning support applications, such as Whatsapp, e-mail, etc.
1.	Model 1	√	√	√
2.	Model 2	√	√	
3.	Model 3	√		√
4.	Model 4	√		
5.	Model 5		√	√
6.	Model 6		√	
7.	Model 7			√

Through an understanding of the context of the variable under study, the type of data collected, and the purpose of the study, the data analysis used in this study uses descriptive statistical analysis and inferential statistical analysis. The stages of analysis are described as follows: (a) Conduct descriptive analysis of data using descriptive statistical measures such as mean, standard deviation, and curves as choices in providing descriptive statistical analysis; (b) Testing assumptions before inferential analysis using available test models such as the Kolmogorov Smirnov test for normal distribution and the Levene test for variance homogeneity tests; (c) For testing hypotheses, data analysis is focused on collecting data from students. Data analysis used the analysis of variance (ANOVA) model for all items in the questionnaire.

This research procedure can be summarized in the following scheme.

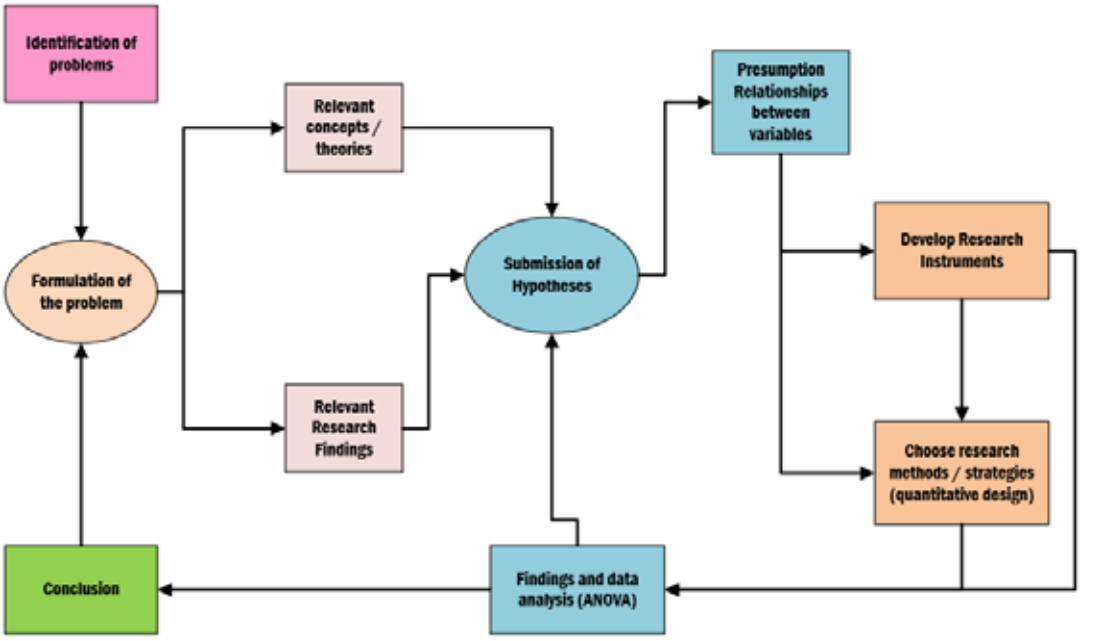

Figure 1. Schematic of Research Procedure

3. Result and Discussion

Characteristics of respondents and descriptive analysis

One of the characteristics of respondents that is important in this study is the location (place) of the respondent when conducting the online learning process. This condition is related to the level of difficulty of respondents to be active in the online learning process, due to the geographical location of Southeast Sulawesi which has land and islands. Snapshot of the distribution of respondents in the online learning process by district or city can be seen in the following figure.

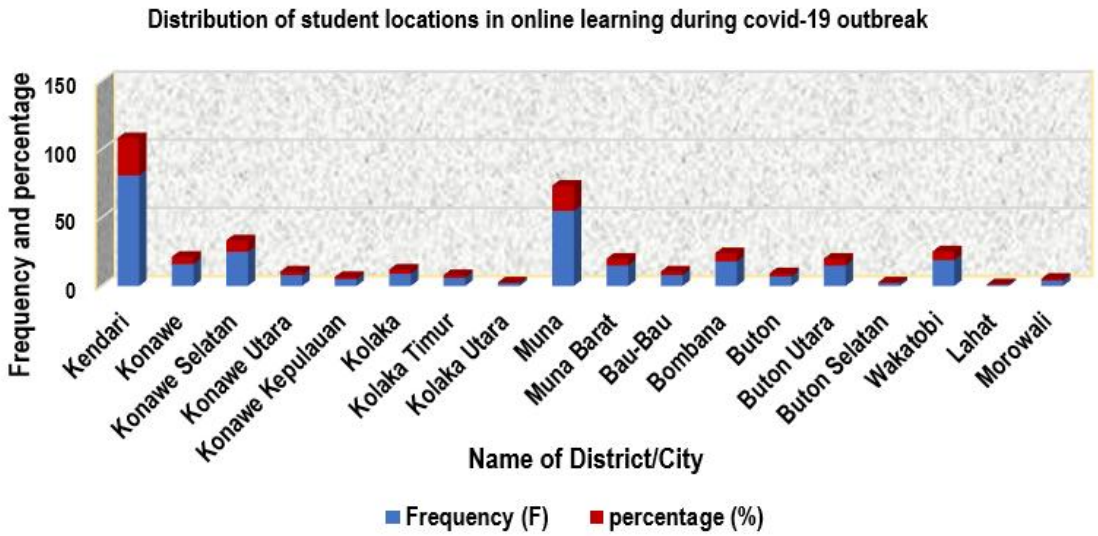

Figure 2. Distribution of Student Locations in Online Learning During Covid-19 Outbreak

The above data illustrates that respondents in conducting online learning are spread to all districts/ cities in the Southeast Sulawesi region, where participants are dominated by students who live in Kendari City by 23.76 percent. Geographically, Southeast Sulawesi Province has land areas and islands, so the problem of network quality is fundamental in online learning activities. The

Indonesian Telecommunications Regulatory Agency (BRTI), based on reports from cellular operators, found that there was a shift in internet data traffic during working hours, which were originally located in office and school areas, moved to residential areas, during Work From Home (WFH). BRTI noted 4G signal coverage based on settlements in Indonesia, had reached 97.51 percent. Meanwhile, by region, the new 4G network covers 52.28 percent[10]. That is, these conditions also cover the Southeast Sulawesi region.

Some regions with suboptimal network quality are almost experienced by all regencies/cities outside of Kendari City, especially students who live in rural and coastal areas who have not gotten good quality networks so that when the schedule is online, they must move locations (for example, moving from his village to the district capital) to obtain a better quality network. For example, respondents are in the districts of *Konawe Utara, Kolaka Utara, Buton Utara, Muna,* and *Bombana*. The results of identification of the respondents' locations also found students from outside the province of Southeast Sulawesi, namely from the provinces of Central Sulawesi (*Morowali* District) and from South Sumatra Province (*Lahat* District), although the percentage was relatively small, amounting to 0,34 percent.

Next, the findings regarding the distribution of types of online learning platforms used by students are shown in the following figure.

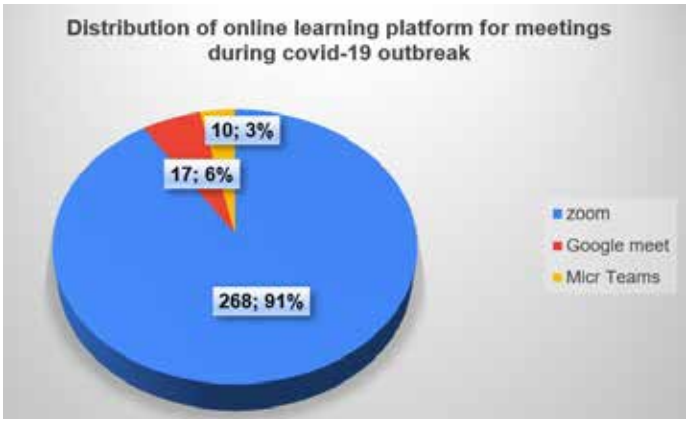

Figure 3. Distribution of Online Learning Platform for Meetings During Covid-19 Outbreak

Overall data shows that all respondents only use three applications, namely zoom, google meet, and Microsoft Teams to conduct meetings in class online. The Zoom application is more widely used up to 91 percent, compared to the other two applications. The findings regarding the dominant use of the Zoom application illustrates that the spread of the COVID-19 virus caused a work from home policy that made Zoom's popularity sharply increase. This video conferencing application is widely used as a face-to-face facility from home for various purposes, ranging from meetings between coworkers, school student learning, online lectures, yoga classes, or just releasing longing with friends. The survey results KompasTekno from CNBC, Tuesday (03/24/2020), said that Zoom is known to be reliable and rarely down. "*Zoom's usability and reliability is the reason behind its very high adoption rates*," said ZoomO's CFO Kelly Steckelberg. This application also produces low latency so it is relatively undisturbed by pauses, and can maintain video and audio quality even though the internet connection is unstable. Different from other applications such as FaceTime which only exists on Apple devices, Zoom is also available on Android and PC. Zoom can be used free of charge, but the duration of video conferencing is limited to only 40 minutes and the number of participants in a session is 100 people. There are some paid packages containing additional features offered on the site. One popular feature of Zoom is the ability to upload images or videos to be used as a background when conducting conferencing[11].

Then, the results of other studies, from [12]evaluated research on the use of Zoom at Indiana University during the semester in spring 2015 and autumn 2015, and the semester in spring 2016. The results of the study found that Overall results suggest that both faculty and student users have had a positive experience with Zoom as a web collaboration tool; they found it easy to use and useful for teaching/learning without many technical difficulties. These results make Indiana

University is considering Zoom as a web collaboration solution that supports virtual classrooms, online courses, group projects, office hours, and more. Zoom works with a range of devices, including phones, tablets, computers, and videoconferencing rooms. Zoom also provides breakout rooms, collaborative screen sharing, and video recording.

Next, an overview of the use of learning platforms for managing online learning classes such as google classroom, Edmodo, Edlink, Rumah belajar, Class dojo, shown in Figure 4 below.

Figure 4. Distribution of Online Learning Platform for Managing Learning During Covid-19 Outbreak

Especially for this aspect, namely aspects regarding the organization of online learning systems, it was seen that respondents only used two applications namely Google Classroom and Edmodo, but it was seen that the google classroom application was very dominantly used by students, reaching 99 percent of all respondents surveyed. While the use of Google Classroom as a Learning Management System (LMS), almost all respondents use this application. As a free application, Google Classroom is in great demand and is used by students. Google Classroom is intended to help all spheres of education that help students to find or overcome learning difficulties, share lessons, and make assignments without having to attend class. Of course, the advantages in this application are one of the attractions to be used, such as being able to streamline the process of sharing files between teachers and students, combining Google Drive for the creation and distribution of assignments, Google Docs, Sheets, Slides for writing, Gmail for communication, and Google Calendar for scheduling; students can also be invited to join classes via private codes, or automatically imported by lecturers. This application is available for mobile users of iOS and Android devices that allows users to take photos and attach assignments, share files from other applications, and access information offline. Basically, Google Classroom serves to improve the social learning aspects of online education that enable students to benefit from their learning experiences and skills.

Then, other aspects of online learning support applications, such as Whatsapp, e-mail, are presented in the following figure.

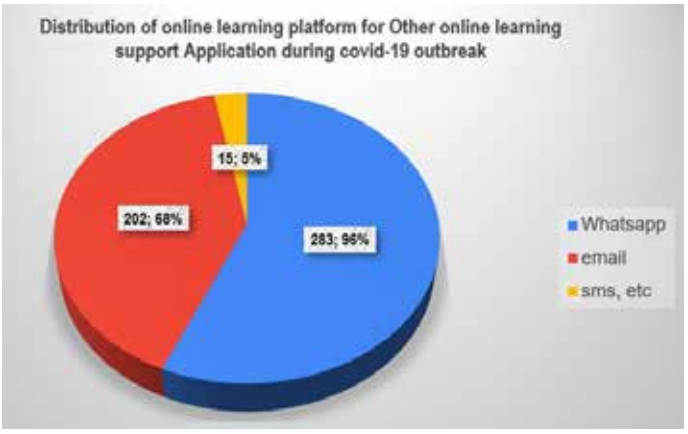

Figure 5. Distribution of Online Learning Platform for Other Online Learning Support Application During Covid-19 Outbreak

The process of using this support application, based on survey results, turns out to overlap, meaning that respondents use WhatsApp, also use email or SMS. This condition calculates percentages must be separate, not made into one package. The calculation of the percentage of the data above, based on the number of respondents, and shows that about 96 percent of respondents still use WhatsApp to carry out the communication process with lecturers, while e-mails around 68 percent, via SMS as much as 5 percent. These results are also following the findings of the study which states that the method of teaching and learning through WhatsApp media can provide effectiveness in terms of cost, time-efficient, and can be available anytime and anywhere [13]. Besides that, WhatsApp has features that can save documents in the form of pdf, Microsoft word, excel, and PowerPoint. Therefore, respondents still use WhatsApp to share documents in the format above .

Research Hypothesis Testing

The hypothesis testing process is based on data obtained from the results of online surveys. The survey results showed that from the seven online learning platform models designed by researchers (see table 1 in the method section), it turns out that respondents only chose four online learning platform models, namely model 1, model 2, model 3, and model 5. Whereas the other three models, namely model 4, model 6, and model 7, none of the respondents chose the model. The distribution of respondents' choices from the four models is presented in the following figure

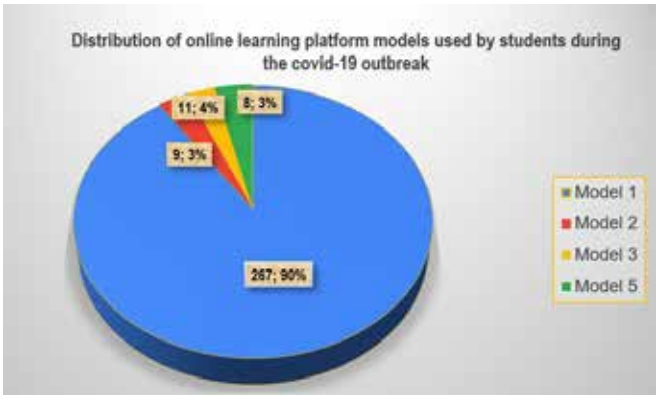

Figure 6. Distribution of Online Learning Platform Models Used by Students During the Covid-19 Outbreak

Figure 6 above, shows that as much as 90 percent of students use Model 1, which is a combination of 3 types of online learning platforms, namely for meetings, for managing learning in

online classes and online learning support applications. While the other 3 models have a fairly small percentage, which ranges from 3 to 4 percent. From Model 1 it is known that this combination is the most dominant combination, which is a combination of the Zoom + google classroom + WhatsApp application. This construction is considered quite ideal in following the on-line learning process because it provides mutual affirmation/reinforcement in the on-line process. The high response to model 1 is inseparable from the online learning process designed by the lecturer. On the meeting side, the use of Zoom is assumed to facilitate students in conducting direct discussions, even though the opportunity is very limited due to consequences beyond the ability of lecturers and students, such as network quality issues. The next process is sending the material, design assignments, quizzes, etc. through google classroom. Student feedback is usually done using WhatsApp, both just notifications and in the process of sending college assignments. Model 1 can be used as an online lecture model that can support the achievement of increased understanding and mastery of students.

Based on the platform models used by the student, a profile plot can be made by relating the level of satisfaction of respondents. The results can be seen in Figure 7 below.

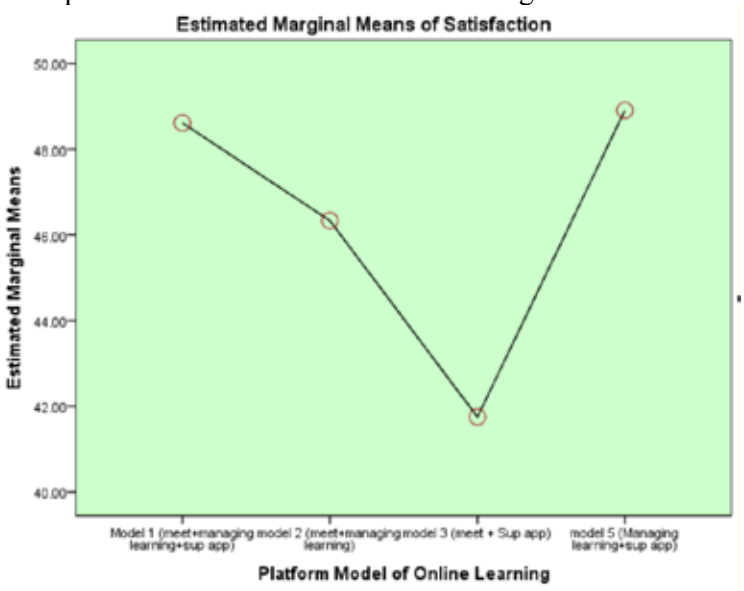

Figure 7. Profile Plot of Platform Model of Online Learning

This plot profile shows that there is a line that "decreases sharply" from model 1 to model 3, and then "moves up" again to model 5. This construction illustrates that there are differences in the level of satisfaction of respondents between those using a combination: Zoom + google classroom + WhatsApp application (model 1) when compared to a combination: Zoom + WhatsApp application (model 3). Furthermore, there are differences in the level of satisfaction of respondents between those who use a combination: google classroom + WhatsApp application (model 5) when compared to a combination: Zoom + WhatsApp application (model 3).

Before using the ANOVA test, the prerequisite homogeneity variance test is first performed. Lavene test results show the fulfillment of the assumption that the variance of the level of satisfaction of respondents from all models of online learning platforms chosen by students is homogeneous, according to Lavene's test value of 0.703 with a significance level of 0.551> 0.05 as the recommended value. Furthermore, the data are analyzed by the ANOVA test and produce the results of the analysis in the following ANOVA table:

Table 2. Results of Hypothesis Testing Using ANOVA

Tests of Between-Subjects Effects

Dependent Variable: Satisfaction

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	407.050[a]	3	135.683	3.536	.015	.035
Intercept	104151.820	1	104151.820	2713.920	.000	.903
Platf_Mod	407.050	3	135.683	3.536	.015	.035
Error	11167.675	291	38.377			
Total	701759.000	295				
Corrected Total	11574.725	294				

a. R Squared = ,035 (Adjusted R Squared = ,025)

The results of the analysis in the Tests of Between-Subjects Effects table show that the Model of Online Learning Platform provides an F test value of 3,536 with sig. 0.015 <0.05. This shows that the selection of online learning platform models influences the level of satisfaction of respondents. The value of partial eta squared (η2) produced by this model is 0.035. This value when compared with the size of Cohen and Miles & Shevlin (2001) in[14], then 0.035 <0.06 so it is in a small category. This partial eta squared value measures the magnitude of the influence of the on-line learning platform model variables used on the variable level of respondents' satisfaction. This value explains that the treatment gives an effect of 0.035 in contributing a unique variant to the level of satisfaction. While the Adjusted R Squared value generated by the ANOVA model is 0.025 which means that 2.5% of the variance in the level of satisfaction is explained by the choice of online learning platform models.

These results reinforce the results of the previous profile plot and at the same time show that there is a significant influence on the choice of online learning platform models on the variability of the level of student satisfaction in participating in the online learning process, even though the magnitude of the effect is relatively small. Based on the analysis results of the instrument open-ended response from students shows that the combined variation between meeting applications through zoom and LMS applications through google classroom, generally gives a good level of satisfaction, compared to just relying on one application.

In the context of the small influence that is generated by models of online learning platforms, it is likely due to the intervention of lecturers who provide online learning processes. This intervention is also closely related to the ability of lecturers to manage learning in LMS, as well as technical abilities in carrying out the process. This condition can cause students to not be able to use these types of platforms at will.

Another thing commented by respondents was about the amount of the cost of the online package incurred due to a large number of courses and meetings that had to be attended. This condition can be a type of student concern that shows that the cost of choosing the learning platform plays an important role in online satisfaction, because the higher the frequency of participating in online learning the higher the cost needs so that this has an impact on the activeness of students participating in the online learning process.[15] states that that the need for affiliation plays a significant role in online satisfaction, the higher the need for affiliation is less the likelihood that the student would take another online course

4. Conclusions

The choice of an online learning platform is that it must consider at least two aspects, namely a platform that is understood and can be used; and platforms that can help achieve learning goals. Types of platforms for online learning can combine 3 options, namely (1) learning management systems, (2) social media applications, and (3) web conferencing software.

A significant influence of the choice of online learning platform mode on the variability of student satisfaction levels in participating in the online learning process is shown by the effect of the change in unique variants of satisfaction levels.

The choice and use of online learning platform models have a significant influence on the variability of college student satisfaction levels. The use of a platform combination model that is a

combination of Zoom, Google Classroom, WhatsApp application (model 1) becomes a very dominant choice used by students in online learning. Need to build an agreement or adjust the needs between lecturers and students in determining the platform models that will be used by considering aspects of the online learning process.

5. Acknowledgment

We would like to thank colleagues who have provided assistance in the on-line survey process, department leaders and faculty leaders at the Faculty of Teacher Training and Education, Halu Oleo University. Dear Mr. Amirudin who has helped the research team in passing the questionnaire to students through an online survey.

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