Different domiciles in online learning during the COVID-19 pandemic

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Abstract

This study aims to determine differences in students' perceptions, participation and satisfaction with online learning in terms of differences in residence namely in villages and cities. This study used comparative survey research. The research data sources were 597 Indonesian students from three regions namely western, central and eastern Indonesia. Data were collected using a questionnaire, then analysed using one-way multivariate analysis of variance assisted by the Statistical Package for the Social Sciences. The results of this study are as follows: (1) there are differences in perceptions of online learning during the COVID-19 period between students who come from villages and cities; (2) there are differences in participation in the online learning process during the COVID-19 period between students from rural and urban backgrounds and (3) there are differences in student satisfaction with online learning in terms of village and city backgrounds. The conclusion of this study is that students' perceptions, participation and satisfaction with online learning are better in cities than in villages. The implications of this research require the attention of the government and academics to find steps to overcome online learning problems especially in rural areas.

Keywords: COVID-19, Different domiciles, Online learning, Participation, Perception, Satisfaction.

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Contribution of this paper to the literature
This research support online learning as well as providing input to the government in making policies to support online learning especially in areas that do not yet have adequate internet access. This research can also provide input to online learning experts to develop online learning models for students in rural areas.

1. Introduction

Education and learning are important topics worldwide during the COVID-19 pandemic (Osman, 2020). The policies taken to implement online education offer alternatives and ensure that education will be sustainable now and in the future (Chukwuemeka, Dominic, Kareem, & Mailafia, 2021). Online learning in universities during the pandemic process has various advantages and disadvantages (Aksoy, 2022). Online learning can be a solution for learning during the COVID-19 period and in the future (Seilkhan et al., 2022). On the other hand, some students thought that online learning had disadvantages (Mahfouz & Salam, 2021). There are even students in the online lecture process who say "we really miss campus and want to study face-to-face" (Bagheri & Mohamadi Zenouzagh, 2021). The findings reveal that COVID-19 has impacted schools (Du Plessis, 2020). Students perceptions must be considered by government policies and higher education institutions in implementing online learning during the COVID-19 period which has not yet progressed (Shehzadi et al., 2021) which is one of the concerns of educators and policymakers regarding the implementation of learning education during the COVID-19 period (Scull, Phillips, Sharma, & Garnier, 2020).

Another aspect that is also important to note is the level of participation in the learning process, where COVID-19 also affects school operations (Du Plessis, 2020). Similarly, the satisfaction factor felt by students has not guaranteed the implementation of online learning during the COVID-19 period (Baber, 2020). College teachers also reported challenges related to online teaching during COVID-19 (Na & Jung, 2021). This article describes a further study related to the perception, participation and learning satisfaction of Indonesian students in various areas (both urban and rural) when undergoing online lectures.

1.1. Theoretical Framework
1.1.1. Perception of Online Learning

Perception is a person's response to an object that is observed or studied. The perception of online learning by students in higher education is a student response to the continuity of learning that is prepared online. Perception is always oriented towards responding to an event or events that are felt by the psychological condition and knowledge of the person who perceives them. Perception is dependent on the knowledge and psychological condition of the person who perceives it. The following references will present the results of research on perceptions related to the implementation of online learning especially during COVID-19. Information technology and collaboration with stakeholders including the government, schools, teachers, parents and the community determined the success of online learning in Indonesia during the COVID-19 pandemic (Rasmitadila et al., 2020). Students have a relatively good perception of online learning during the COVID-19 period after fixing some of the obstacles they find (Surani & Hamidah, 2020). However, students had negative perceptions of online learning during the COVID-19 period. This is because students did not like the new digital pedagogy and preferred traditional teaching methods during the COVID-19 pandemic (Blizak, Blizak, Bouchenak, & Yahiaoui, 2020). Similarly, the research results concluded that the majority of students prefer face-to-face classes to online learning and most of them are not willing to study online in the future (Imsa-ard, 2020). These findings form the basis for conducting broader research with a wider sample representing all regions of Indonesia.

1.1.2. Student Participation in Online Learning

The implementation of learning during the COVID-19 period is also very important to know about student participation through online learning for both those who live in urban and rural areas (Allen, Rowan, & Singh, 2020). Online learning is less effective in motivating desire and appreciation and is less attractive (Azhari & Fajri, 2022). Obstacles to online learning include internet network facilities and being unable to do field practicum during the COVID-19 period (Yustina, Halim, & Mahadi, 2020). Online learning for medical students in Saudi Arabia can be carried out through online learning models and learning outcomes must be evaluated rigorously and regularly to monitor their effectiveness (Khalil et al., 2020). Online learning will work well if it has an online learning module (Safiah, Yunus, Ahadin, & Abdar, 2023).

1.1.3. Satisfaction with Online Learning

This study also tries to find student satisfaction with online learning during the COVID-19 period. COVID-19 affects every aspect of life and requires a re-evaluation of perspectives on education (Akcil & Bastas, 2020). Online learning cannot produce the expected results and most students cannot participate in learning because they cannot access the internet due to technical and monetary problems (Adnan & Anwar, 2020). During online learning, the level of student satisfaction was low so it needs to be improved (Baber, 2020). Student dissatisfaction is shown by various problems such as anxiety, depression, poor internet connectivity and a poor learning environment at home (Kapasia et al., 2020).

1.1.4. The Effects of Urban and Rural Residence

There may be differences between rural and urban areas for students taking online courses during COVID-19 (Al Lily, Ismail, Abunasser, & Alqahtani, 2020). During the COVID-19 period, urban students with access to internet facilities can be predicted to have a positive perception of online learning as compared to students in rural areas. References for supporting research results included Oleh (Ferdous et al., 2020) who found that people who live in urban areas have a positive attitude than people living in rural areas about the negative consequences of the COVID-19 pandemic. Teachers' readiness to carry out online learning during the COVID-19 period varies significantly depending on geographical differences (Lapada, Fabrea, Roldan, & Farooqi, 2020).

The level of student participation in online learning during the COVID-19 period may have been different due to different domiciles. Internet access is not an obstacle for students who live in urban areas (Rahiem, 2020). The results of research have proven that prospective students from rural areas have great disadvantages regarding digital skills for higher education (Rahiem, 2020). Individuals from distant and marginalised areas face major challenges to study during this pandemic (Kapasia et al., 2020). The results of other studies recommend that nursing educators and managers develop online learning programmes and provide support to meet the needs of nurses working in rural healthcare environments (Xing et al., 2018). The academic achievement of students who come from rural and urban areas shows a significant difference (Faisal, Shinwari, & Mateen, 2016).

The results of existing research that can be supported are described in the findings of Aristovnik, Keržič, Ravšelj, Tomaževič, and Umek (2020) who wrote that students with certain socio-demographic characteristics (male, part-time, first degree, applied science, low standard of living, from Africa or Asia) were significantly less satisfied with academic performance during the crisis. Other psychological aspects such as anxiety due to COVID-19 are highly experienced by people who live in urban areas (Cao et al., 2020). Online learning has a higher learning phase and high academic performance causes low student satisfaction (Wang, Wang, & Wu, 2020).

The explanation in the introduction above is the basis for focusing this research on the formulation of the problem as follows:

1. Are there differences in perceptions of online learning between students who live in rural areas and those who live in cities during the COVID-19 period?
2. Are there differences in participation between students who live in rural areas and those who live in cities in online learning during the COVID-19 period?
3. Are there differences in satisfaction between students who live in rural areas and urban areas regarding online learning during the COVID-19 period?

2. Method

2.1. Research Design

This study used a comparative survey research design (Harkness et al., 2010). The survey was conducted among Indonesian students who represented the eastern, central and western regions. Then, comparison is used to distinguish the perceptions, participation and satisfaction of students who live in urban and rural areas towards online learning during the COVID-19 period. The research design is shown in Figure 1.
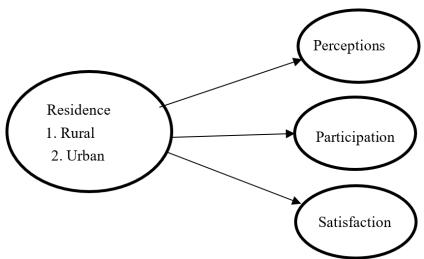

Figure 1. Comparative survey research design.

2.2. Research Sample

The research sample was obtained using the random cluster sampling technique. The population was Indonesian students who were then randomly assigned to three regions of Indonesia, namely students from the western, central and eastern regions of Indonesia. Regional sampling is used for representation between regions in Indonesia. Meanwhile, the determination of rural and urban areas in the sample depends on the presence of students when taking online learning during the COVID-19 period. The sample area map is shown in Figure 2.
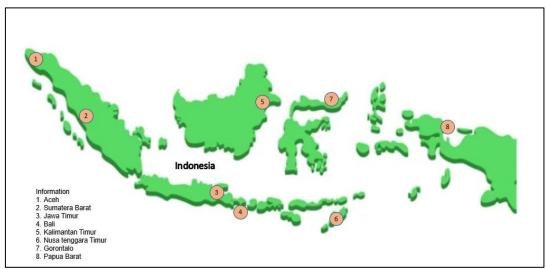

Figure 2. Distribution of the sample in the three regions of Indonesia.

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The number of samples for the three regions of Indonesia is shown in Table 1.

Table 1. Research sample.

Residence	Indonesian territory			Amount
	West region	Central region	Eastern region	
Rural	105	101	95	301
Urban	101	96	99	296
Amount	206	197	194	597

2.3. Data Collection

The data collection instrument used a closed questionnaire where alternative answers were standardised according to the aspects to be explored, both related to perception, participation and satisfaction. There were 21 items in the questionnaire namely 7 items for the perception aspect, 6 items for participation and 8 items for satisfaction. All respondents answered the questionnaire well and data processing was carried out. The results of data collection met the requirements for data processing after the validity test was carried out where the calculated *r*-value was greater than the *r*-table and reliability met the requirements where the Cronbach alpha value was 0.897 greater than 0.6.

2.4. Data Analysis

The data analysis for this research used a one-way MANOVA. The analysis was performed using Statistical Package for the Social Sciences version 23. A test for normality and homogeneity as a pre-requisite was carried out using MANOVA. The results of the normality test of the two online study groups in rural and urban areas for the three dependent variables, namely participation, perception and satisfaction show the results of the tests of normality where the sig. value is >0.05. It means that all dependent variables in the two sample groups are declared normal and the data is shown in Table 2.

Table 2. Data normality test results.

Tests of normality				
	Place	Kolmogorov–Smirnov[a]		
		Statistic	df	Sig.
Participation	Rural	0.048	301	0.088
	Urban	0.045	296	0.200[*]
Perception	Rural	0.049	301	0.073
	Urban	0.048	296	0.200[*]
Satisfaction	Rural	0.044	301	0.200[*]
	Urban	0.048	296	0.200[*]

Note: [*] This is a lower bound on the true significance.
[a]Lilliefors significance correction.

The results of the homogeneity test on the three dependent variables, namely participation, perception and satisfaction were also stated to be homogeneous based on the results of the Levene test scores. The sig. value is greater than 0.05 which states that all data on the three dependent variables are declared homogeneous. The results of the homogeneity test are explained in Table 3.

Table 3. Data normality test results.

Levene's test of equality of error variances				
	F	df_1	df_2	Sig.
Perception	1.263	1	595	0.261
Participation	2.600	1	595	0.107
Satisfaction	0.459	1	595	0.498

Note: [a] Design: Intercept + X.

A test of the null hypothesis of the dependent variable is equal across groups.

3. Findings and Discussion

3.1. Findings

The exposure of the research results was carried out following the order of the problem formulations in the introduction which are described below:

3.1.1. Perception, Participation and Student Satisfaction with Online Learning during the COVID-19 Period

The results of data processing showed that the perception, level of participation and level of student satisfaction with online learning during the COVID-19 period are shown in Table 4.

In Table 4, it can be explained that Indonesian students have an average perception of 17.43. The score of 17.43 is in the category of poor perceptions. In essence, Indonesian students had a poor perception of online learning during the COVID-19 period. Table 4 also shows student participation in the online learning process with a score of 14.58. The total score was an average of 14.58 including the category of less participation. This means that the level of participation in online learning for Indonesian students is not as high as expected. In the aspect of satisfaction with the online learning process during the COVID-19 period, Indonesian students had an average score of 20.25. The score of 20.25 is also included in the less satisfied category. This means that Indonesian students in general are still not satisfied with the online learning that was carried out during COVID-19.

Table 4. Student perceptions, participation and satisfaction with online learning during the COVID-19 period.

Descriptive statistics				
	Place	Mean	Std. deviation	*N*
Perception	Rural	16.63	4.913	301
	Urban	18.23	4.656	296
	Total	17.43	4.850	597
Participation	Rural	14.02	4.181	301
	Urban	15.15	4.539	296
	Total	14.58	4.394	597
Satisfaction	Rural	19.51	5.253	301
	Urban	21.00	5.056	296
	Total	20.25	5.206	597

3.1.2. Differences in Perceptions, Participation and Satisfaction of Rural and Urban Students with Online Learning during the COVID-19 Period

To prove the existence of differences in perceptions, participation and satisfaction of rural and urban students with online learning during the COVID-19 period, the SPSS test is presented in Table 5.

Table 5. Differences in perception, participation and satisfaction of rural and urban students.

Tests of between-subjects effects						
Source	Dependent variable	Type III sum of squares	df	Mean square	*F*	Sig.
Corrected model	Perception	382.951[a]	1	382.951	16.711	0.000
	Participation	188.994[b]	1	188.994	9.933	0.002
	Satisfaction	333.587[c]	1	333.587	12.546	0.000
Intercept	Perception	181,403.936	1	181,403.936	7,916.060	0.000
	Participation	126,944.505	1	126,944.505	6,672.063	0.000
	Satisfaction	244,931.402	1	244,931.402	9,211.890	0.000
Rural (X_1) and urban (X_2)	Perception	382.951	1	382.951	16.711	0.000
	Participation	188.994	1	188.994	9.933	0.002
	Satisfaction	333.587	1	333.587	12.546	0.000
Error	Perception	13,634.982	595	22.916		
	Participation	11,320.634	595	19.026		
	Satisfaction	15,820.226	595	26.589		
Total	Perception	195,295.000	597			
	Participation	138,381.000	597			
	Satisfaction	260,951.000	597			
Corrected total	Perception	14,017.933	596			
	Participation	11,509.628	596			
	Satisfaction	16,153.812	596			

Note: [a] R squared = 0.027 (Adjusted R squared = 0.026).
[b] R squared = 0.016 (Adjusted R squared = 0.015).
[c] R squared = 0.021 (Adjusted R squared = 0.019).

Table 5 shows the results of the one-way MANOVA test where the tests of subject effects show that student residence between rural and urban areas as the independent variable affects other dependent variables, namely perceptions, participation and student satisfaction. The results of the statistical descriptions in Table 4 have also shown that there are differences when viewed from the mean value but the proof of the significance level test through MANOVA at the 5% level (0.05) proved to have a significant effect. The explanation of the findings about the differences between rural and urban students in terms of the dependent variables (perception, participation and satisfaction) with online learning during the COVID-19 period is as follows:

First, place of residence influenced Indonesian students' perceptions of online learning during the COVID-19 period with a sig. value (0.00) lower than 0.05. This means that Indonesian students who live in rural areas have a bad perception of online learning while students who live in urban areas have a good perception. However, overall students' perceptions of online learning were also concluded to be less positive. Second, the place of residence whether rural or urban has an effect on the level of student participation in online courses during the COVID-19 period. Students who live in urban areas are freer to participate in the online learning process during the COVID-19 period compared to students in rural areas. The MANOVA test results also show that the sig. value (0.02) is lower than 0.05. Third, student residence also affects the level of student satisfaction with taking online learning during the COVID-19 period. Students in urban areas are more satisfied than students in rural areas. It is proven that the sig. value (0.00) is also less than 0.05. Students in rural areas were dissatisfied with online learning during the COVID-19 period while students in urban areas were generally satisfied.

3.2. Discussion

Findings related to the perceptions, participation and satisfaction of Indonesian students with the implementation of online learning during the COVID-19 period were not encouraging. It was explained that students' perceptions were in the poor category, participation was also not good and satisfaction was in the less satisfied category. In general, perceptions, participation and satisfaction come from students who live in rural areas. Meanwhile, students who live in urban areas have good perception, participation and satisfaction in the satisfied category. This finding is supported by research results that reveal resources, staff readiness, self-confidence and accessibility of students are very important for learning that is integrated with information technology (Ali, 2020). In this case, the student's accessibility to online learning is certainly not good due to limitations in various aspects.

The results of other studies also state the importance of designing learning activities with certain characteristics, a combination of social and cognitive aspects adapting to assessments and new learning needs

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(Rapanta, Botturi, Goodyear, Guàrdia, & Koole, 2020; Salehudin, Sarimin, Steven, Yunus, & Safiah, 2020). During the COVID-19 pandemic, most children from low socio-economic communities in rural areas were unable to learn formal education because no educational technology solutions were available (Bin Badar, 2020). During the COVID-19 period, in online learning rural students will also face many difficulties due to social, cognitive and inadequate facilities. It is different from online learning in urban areas where students have a high level of adaptation to the university environment that uses technology, including in the conditions of the coronavirus pandemic (Shulga et al., 2021). Therefore, with the growth of EdTech start-ups during the pandemic period, it is recommended that academic institutions look for ways to face the challenges associated with online learning (Dhawan, 2020).

The second finding shows that there are differences in perceptions about the online learning process between students who live in rural areas and students who live in urban areas. During the COVID-19 period, students who live in villages had a poor perception of online learning. Among the causes are supporting learning facilities, such as HP Android phones and laptops. Another factor is the lack of internet network as well as the blame for parents, the community and the government who did not support them in taking online courses. On the other hand, students in urban areas do not have problems with the learning process. Online learning implemented in urban areas supported by adequate internet access can be used without problems (Suartama, Mahadewi, Divayana, & Yunus, 2022).

This finding is also supported by the results of previous studies which state that internet access is the factor that influences the use of technology in learning (Dhawan, 2020). Another study found that there are challenges for students in groups due to unstable internet access and electricity shortages in online learning (Omodan & Ige, 2021; Intan Safiah, Degeng, Setyosari, & Ulfa, 2020). Online learning in areas that have adequate internet facilities does not hinder the learning process but students in rural areas that do not have internet facilities will find it difficult to carry out online learning. Online learning in underdeveloped countries is not going well due to inadequate internet access and other technical problems (Adnan & Anwar, 2020). The results also reveal that it is necessary to reduce technology risk through strategic policies to prepare for future online learning projects after the COVID-19 crisis (Catyanadika & Isfianadewi, 2021). The results also reveal that it is necessary to reduce technology risk through strategic policies to prepare future online learning projects after the COVID-19 crisis (Catyanadika & Isfianadewi, 2021). The conditions in Indonesia compared with other developing countries especially in remote areas show that internet access is still very limited.

The third finding is that the level of participation in online learning is higher among students who live in cities. The results of the study concluded that in online learning where students study in a campus environment with a collaborative model of online learning projects, student participation is high (Yunus, Amirullah, Safiah, Ridha, & Suartama, 2022). The high level of participation of city students in the online learning process is also due to adequate facilities, good internet networks and better support capacity for parents and the community. Online learning demands specific, complex and modern tools that are widely available, easy to use and keep up with changing technology (Salehudin, Hamid, Andriyani, Yunus, & Zulherman, 2023). On the other hand, students in rural areas do not want to participate because of the many obstacles they face during online learning. In terms of attitudes towards online learning for nursing students in rural hospitals, they are more positive than those of urban students (Xing et al., 2018). If students have the necessary digital devices such as internet access, affordable internet costs and electricity supply, they can take part in a virtual learning process in mathematics (Mulenga & Marbán, 2020). The problem is that students in rural areas cannot participate in LMS-based online learning, both e-learning developed by the university (Yuhasriati et al., 2020) and other applications like Schoology and Google Classroom, due to network limitations, costs and other inadequate Android facilities while for students in urban areas such constraints are only experienced by a small proportion of students. On the other hand, some students at certain universities admit that the e-learning that has been developed is not good and so the learning process does not go well.

The results of other studies support the conclusion that students from rural schools scored lower on all indicators of internet inequality such as digital access, social support, internet use and self-efficacy; therefore, students in rural areas have less access to internet as compared to students in the city (Li & Ranieri, 2013). In the internet era, the aspect of student retention requires a model that can assume a transactional adaptation (Shea & Bidjerano, 2014). There are significant differences in the availability of technology between rural and urban schools including the number of interactive boards, desktops in the lab, notebooks and tablet computers (Wang, 2013). Learning using internet technology is important during the COVID-19 pandemic and requires special designs such as gamification for universities (Suartama et al., 2023). From the results of the research above, it can be understood that the internet and other limited digital facilities mean that participation in online learning for rural students is lower than for urban students.

The fourth finding shows that there is a difference in the level of satisfaction between students who live in urban areas and students who live in rural areas. Students in urban areas had a higher level of satisfaction with online learning during the COVID-19 period than students who lived in rural areas. The use of online modules is satisfying for students but online modules cannot be used if students do not have technological facilities (Safiah et al., 2023). The factor of higher satisfaction for urban students is also due to their ease of accessing the internet and entering all online systems prepared by lecturers through the Zoom application or the e-learning system prepared by the university. Meanwhile, students in rural areas have a low level of satisfaction due to the many obstacles they experience while taking online lectures. Most rural students hope that face-to-face learning can go well in the next semester. The only thing that facilitates communication between rural students and lecturers is the WhatsApp (WA) application. WhatsApp (WA) itself is not used for learning networks except for ordinary communication. The most widely used applications used by lecturers in lectures are Google Meet and Zoom.

The research results that support the findings above reveal that there is a significant difference in the level of satisfaction with e-learning and virtual classes for the independent variable of education level (Malkawi, Bawaneh, & Bawa'aneh, 2020). The results of research by Fauzi and Khusuma (2020) concluded that online learning helped teachers during the COVID-19 pandemic but teachers were not satisfied with online learning as a whole. The factors that influence cognition are strongly related to the satisfaction of conventional factors and specific factors

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caused by COVID-19. Conventional factors include social factors, perceived autonomy, quality of content and self-efficacy (Zuo, Cheng, Bao, & Zarifis, 2021). 78.3% of the students do not want to learn mathematics through distance learning in the future (Almarashdi & Jarrah, 2021). From the research results that support the above, it can be understood that aspects of satisfaction with learning are strongly supported by the readiness of facilities, networks and self-preparedness. Online learning in normal times can generally be said to be positive (Yunus, Setyosari, Utaya, & Kuswandi, 2021). Thus, learning outcomes are influenced by interest, self-efficacy and teacher perceptions (Guo, Klein, & Ro, 2020). , The level of satisfaction in the lower category is caused by the availability of facilities, networks and student readiness for students in rural areas.

4. Conclusion and Recommendations

4.1. Conclusion

The results of this study can be concluded to show that Indonesian students have poor perceptions and participation and are less satisfied with online learning during the COVID-19 period. Poor perceptions, poor participation and less satisfaction due to online learning being implemented are considered too forced while other solutions have not been found. The perception of students who live in urban and rural areas has differences in the implementation of online learning during the COVID-19 period. Urban students have good perceptions while rural students have less positive perceptions. Participation in online learning during the COVID-19 period was higher for urban students compared to rural students. The factors causing the high participation of civil society students are due to the good facilities, networks and readiness of students compared to rural students. There are differences in student satisfaction with online learning between urban and rural students during the COVID-19 period. The difference in satisfaction between urban and rural students is also inseparable from the convenience that city students get from the facilities they have and the readiness of complete internet equipment facilities, students in rural areas inversely experience this. This research is limited to surveys. Further research is being carried out that will comprehensively and qualitatively report on the limitations of online learning in rural areas.

4.2. Recommendations

Based on the conclusion drawn from the results of this study, it is suggested that the government needs to provide internet facilities to rural areas to support good online learning for rural students. It is necessary to design a better learning strategy to overcome the COVID-19 problem which has not been resolved until now for the next semester. The government needs to pay attention to the interests of students who still face obstacles in implementing online learning Indonesian academics still need to find the right steps towards efforts to address online learning problems more precisely during both the existence of COVID-19 and post-COVID-19 for future education.

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