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Tabel of Content

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Analysis of Factors Affecting Local Own-Source Revenue in Regency/City of Bali Province in 2010-2019

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Abstract: Local own-source revenue (PAD) is one indicator to determine the independence of regional autonomy in exploring the potential to support sources of revenue. All regions are trying to increase PAD in their area by continuously increasing the potential found in their regions, and Bali Province is one of them. This research aims to analyze the effect of gross regional domestic product (GRDP), investment, and general allocation fund (DAU) on local own-source revenue in the regencies/cities of Bali Province in 2010-2019. Based on the analysis, the results obtained that jointly, all independent variables affected local own-source revenue. Individually or partially, the investment variable had a negative and insignificant effect on local own-source revenue. Meanwhile, the GRDP and general allocation fund (DAU) variables had a positive and significant impact on local own-source revenue in the regencies/cities of Bali Province.

Keywords: Local Own-Source Revenue (PAD); Gross Regional Domestic Product (GRDP); Investment; General Allocation Fund (DAU)
JEL Classification: H27; H11; H71

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Introduction

Indonesia, which consists of 34 provinces, has a variety of tribes, cultures, and languages. Indonesia also has a wealth of nature and culture that never runs out to be explored. Of course, because of this diversity, Indonesia has become an exciting place for everyone to visit. In this case, the tourism sector is one of the income sources for developing countries such as Indonesia. The vital role of the tourism sector will affect the economy and local own-source revenue. Hence, the government can provide facilities to build and develop tourism sites so that the tourism sector can contribute to economic development. According to Wijaya and Sudiana (2017), the tourism sector is one of the efforts made to increase local own-source revenue (PAD).

According to Law No. 33 of 2004 concerning the financial balance between the central government and regional governments, "the relationship in the field of finances, public services, exploitation of the natural and other resources between the central government and the regional governments and among the regional governments need to be established fairly and harmoniously." Under Law No. 33 of 2004 article 6, PAD comes from: Regional Tax; Regional Retribution; Proceeds from the management of regional assets set aside for the purpose; Other legal PAD.

Moreover, local own-source revenue (PAD) is an indicator to determine the independence of regional autonomy in a region. In a study conducted by Wijaya and Sudiana (2017), local governments need to increase local own-source revenue by extracting regional potential to reduce dependence on the central government. PAD can support the implementation of governance and development to reduce regional dependence in obtaining funds from the central government. Improving the effectiveness and efficiency of public services and creating community welfare is also a crucial goal in increasing local own-source revenue. By paying attention to the large amount of local own-source revenue that an area can obtain, it can measure the ability of the region to carry out autonomy in the area.

Specifically, Bali Province is an area with cultural diversity and natural beauty. Bali is a prime destination for foreign tourists, having a variety of tourism objects, in natural, historical, and cultural. It can also be said that the Bali tourism sector can increase PAD if the local government adequately develops it. According to Sari (2014), the tourism sector has a strategic role and function in development. For the state, the benefits obtained in the tourism sector are as a foreign exchange earner, while the region will get income, increasing the community's economic growth. Looking at the number of foreign tourists visiting Bali can show the tourism sector's development.

Table 1 Data on the Number of Tourist Visits to Bali in 2015-2019

No	Year	Number of Foreign Tourists
1.	2015	4,001,835
2.	2016	4,927,937
3.	2017	5,697,739
4.	2018	6,070,473
5.	2019	6,275,210

Source: Statistics Indonesia of Bali Province

The Table 1 shows presented that the number of tourist visits to Bali from 2015 to 2019 has increased. The Table 1 also shows that the number of tourist visits with the most tourist visits in 2019 was 6,275,210 million people, while the smallest number of tourist visits was in 2015 with 4,001,835 million people.

Therefore, it makes Bali and the tourism sector inseparable since it can be said that the tourism sector is the most significant income contributor, and the Balinese population is very dependent on the tourism sector for income. The tourism sector's increase has a very large or positive impact on increasing PAD.

Table 2 Total Local Own-Source Revenue (PAD) of Bali Province 2015-2019 (Billion Rupiahs)

No.	Year	Local Own-Source Revenue (Billion rupiahs)	Growth rate (%)
1.	2015	3,041,266,607	4.14
2.	2016	3,041,295,258	0.009
3.	2017	3,398,472,278	11.74
4.	2018	3,718,499,635	9.40
5.	2019	4,023,156,316	8.20

Source: Statistics of Bali Province

Based on the Table 2, it can be seen that the PAD of Bali Province has increased every year starting from 2015 to 2019. In 2015, the PAD growth rate of 4.14% amounted to 3,041,266,607 billion rupiahs. The PAD growth rate experienced a decrease, only realized by 0.009% with 3,041,295,258 billion rupiahs in 2016. Meanwhile, in 2017, the PAD growth rate showed a very high increase to 11.74%, 3,398,472,278 billion rupiahs. This increase was due to an increase in local taxes and retributions. An increase in the PAD contribution can further predict the independence of local governments, not to depend on the central government and provincial governments.

Efforts to improve the economy in Bali Province, especially in the tourism sector, have so far been very dependent on the world economy; such as from tourist-producing countries to Bali, the investment is significant. On the other hand, improving the public infrastructure for the community undoubtedly requires significant capital; therefore, it can take advantage of regional advantages to attract foreign and domestic investors. One of the capabilities of the regions to improve the quality of service to the community and policies related to investment depends on the ability of the regions to formulate policies themselves (Wadjaudje et al., 2016). The following is investment data for Bali Province in 2015-2019:

Table 3 Bali Province Investment 2015-2019 (Million Rupiahs)

No.	Year	Investment (Million rupiahs)	Growth rate (%)
1.	2015	19,007,670	8.07
2.	2016	12,057,640	16.05
3.	2017	11,267,739	6.55
4.	2018	16,293,534	13.74
5.	2019	14,870,000	17.06

Source: Statistics of Bali Province

From the Table 3, the development of investment in Bali Province in 2015 recorded a growth rate of 8.07% or 19,007,670 million rupiahs, which increased in the following year, namely in 2016 by 16.05% with 12,057,640 million rupiahs. In 2017, the investment growth rate in Bali Province decreased by 6.55% or 11,267,739 million rupiahs. Then, in the following year, 2018, the investment growth rate increased again by 13.74% or reached 16,293,534 million rupiahs, and 2019 was the most considerable growth rate in the last five years with 17.06% or 14,870,000 million rupiahs. With an increase in investment realization, both from domestic and foreign investments, it is expected to increase income in the area. Based on research (Gitaningtyas & Kurrohman, 2014), investment positively and significantly affected local own-source revenue (PAD). Meanwhile, according to another study (Lestari, 2016), investment did not significantly return on PAD.

Furthermore, economic success can be seen through several macro indicators, one of which is gross regional domestic product (GRDP). GRDP can determine a region's economic condition in a certain period. GRDP data can also describe the ability of a region to manage its development resources. Therefore, the amount of GRDP of each region varies according to each region's potential and production factors (Jaya & Widanta, 2013).

Table 4 Gross Regional Domestic Product at 2010 Constant Prices by Business Field of Bali Province 2015-2019 (Thousand Rupiah)

No.	Year	GDP (Thousand rupiahs)	Growth rate (%)
1.	2015	129,126,562	6.03
2.	2016	137,296,445	6.33
3.	2017	144,933,312	5.56
4.	2018	154,072,662	6.31
5.	2019	162,694,325	5.60

The Table 4 shows that the number of GRDP each year has increased. Based on the Table 4, GRDP at constant prices in 2016 was the highest growth rate of 6.33% or 137,296,445 thousand rupiahs. Thus, the magnitude of this GRDP contribution is expected to increase the economy or income in an area.

Further, according to Law No. 33 of 2004 article 1, paragraph 19, a balancing fund means a fund sourced from APBN allocated to a region to finance the region's need to implement decentralization. The balancing fund has three sources. According to Law No. 33 of 2004 article 10 paragraph 1, the balancing fund consists of: 1) Revenue Sharing Fund (DBH); 2) General Allocation Fund (DAU); 3) Special Allocation Fund (DAK)

Besides, most funds in implementing development and public services come from balancing funds, especially DAU and DAK.

Table 5 Balancing Funds of Bali Province 2015-2019 (Billion Rupiah)

No.	Year	Balancing Fund (Billion rupiahs)	Growth rate (%)
1.	2015	1,070,197,147	5.32
2.	2016	1,946,340,453	8.86
3.	2017	2,673,596,252	7.36
4.	2018	2,493.979,973	6.71
5.	2019	2,548,063,873	2.16

Source: Ministry of Finance of the Republic of Indonesia

The highest balancing fund occurred in 2016, which reached 8.86% or 1,946,340,453. Meanwhile, in 2019, the growth rate was 2.16%, with a total balancing fund of 2,548,063,873 thousand rupiahs. Based on research (Rasulong, 2012), most balancing funds positively and significantly affected local own-source revenue (PAD).

In conducting this research, the researchers refer to several previous studies conducted by Batik (2013), Aslim et al. (2014), Lestari (2016), Muslim et al. (2019), and Rasulong (2012). Based on the research conducted by Batik (2013) entitled "Analysis of the Effect of Investment, GRDP, Population, Development Revenue, and Inflation on Local Own-Source Revenue (PAD) in West Lombok Regency, with a time series from 1980-2007, the research method used was multiple linear regression using the OLS (Ordinary Least Square) method. The dependent variable in the study was PAD, while the independent variables were an investment, GRDP, population, development revenues, and inflation. The study found that the population and inflation variables did not significantly affect

PAD, whereas of the five independent variables, investment, GRDP, and development revenues significantly influenced PAD.

Multiple linear research methods were also used based on Aslim et al. (2014) research. The dependent variable in their study was PAD, while the independent variables comprised GRDP and population. It was uncovered that the two independent variables positively affected the PAD of Banda Aceh City.

In addition, research conducted by Lestari (2016) employed multiple linear regression research methods. The dependent variable of her study was PAD, whereas the independent variables consisted of GRDP per capita, private investment, and inflation. The research showed that partially, GRDP per capita had a significant positive effect on PAD. However, private investment and inflation had no significant positive effect on PAD. Next, research conducted by Muslim et al. (2019) used the multiple linear regression research method. The dependent variable in their study was PAD, while the independent variables were GRDP, total population, and inflation. The result of their research revealed that the GRDP variable had a negative and insignificant effect on Kendiri City's local own-source revenue (PAD). Meanwhile, population and inflation had no significant positive effect on Kendari City's local own-source revenue (PAD).

Moreover, Rasulong (2012) used multiple linear regression research methods, with the dependent variable of PAD and the independent variables of GRDP, balancing funds, and economic growth. The results obtained uncovered that GRDP, balancing funds, and economic growth had a positive and significant effect on PAD.

Research Method

This study employed an analytical method, namely the panel data analysis method, where the panel data regression analysis aimed to know the effect of the independent variables used in this study on the dependent variable. The quantitative analysis method was then used in analyzing this research. In addition, quantitative methods were utilized in this study to analyze the panel data analysis method, which is a combination of time-series data and the cross-section data (Basuki & Yuliadi, 2015). With the function of local own-source revenue (PAD) = f (GDP, investment, and general allocation fund), the following is the regression model in this study:

$$LOG(PAD) = \beta_0 + \beta_1*LOG(PDRB)1it + \beta_2*LOG(INVESTASI)2it + \beta_3*LOG(DAU)3it + et \quad (1)$$

Description: β_0 = Coefficient intercept; β_{123} = Variable coefficient; I = Regency/city; t = Time; LogPAD = Local own-source revenue; LogPDRB = Gross Domestic Product; LogINVESTASI = Investment; LogDAU = General fund allocation; *et* = *Error distribution.*

Result and Discussion

The best way to find out which model to use is the Chow test, Hausman test, and Lagrange multiplier test. The Chow test determines which model is the best between the Fixed Effect Model and the Pool Effect Model. Then, the Hausman test is conducted to determine between the Fixed Effect Models and the Random Effect models appropriate for estimating panel data. If the Chow test and Hausman test find that the best model is the Fixed Effect Model, the Lagrange Multiplier (LM) test does not need to be carried out. On the other hand, if the Chow test and Hausman test find a hypothesis that the best model is the Common Effect Model, the LM test needs to be used.

Based on the Chow Test and Hausman Test results, it was found that the best panel data model to use was the Fixed Effect Model in estimating the effect of Gross Regional Domestic Product, investment, and general allocation funds on local own-source revenue in regencies/cities in Bali province. The selection of these models can be seen in the Table 6.

Table 6 Estimated Results of *Common Effect*, *Fixed Effect*, and *Random Effect*

Dependent Variable: LOG(PAD)	Model		
	Common Effect	**Fixed Effect**	**Random Effect**
Constant (c)	-	-26.06965	-22.02666
Standard error	-	1.748927	2.784687
Probability	-	0.0000	0.0000**
LOG(PDRB)	1.392491	1.998092	1.717961
Standard error	0.100458	0.194002	0.157904
Probability	0.0000	0.0000	0.0000**
LOG(INVESTASI)	-0.019125	-0.012744	-0.021783
Standard error	0.030272	0.012242	0.020289
Probability	0.5292	0.3011	0.2860
LOG(DAU)	-0.153887	0.652717	0.683479
Standard error	0.073830	0.135271	0.157593
Probability	0.0401	0.0000	0.0000**
R^2	0.759076	0.988002	0.707331
F-Stat	-	583.9192	69.28252
Probability	-	0.000000	0.000000*
Durbin-Watson stat	0.457064	1.293518	1.298852

Note: **= Significant at 5%, *= Significant at 10%

The Table 6 is the regression results with the *standard effect model*, *fixed-effect model*, and *random effect model*. Next is how to choose the best model among the three models using the Chow test, Hausman test, and the Lagrange multiplier test.

1. Chow Test

This test was carried out to obtain the best model between the Fixed Effect and Common/Pooled Effect Model. The following are the model selection results on panel data using the Chow Test:

Table 7 *Chow* test

Effect Test	Statistics	df	Prob
Cross-section F	132.836564	(8.78)	0.0000**

Note: **= Significant at 5%

Based on the estimation results in the Table 7, showing that prob = 0.000 for *Cross-section F,* smaller than 0.05 (5%), the null hypothesis was rejected. Thus, from the *Chow* test results, it can be concluded that the best model to be used for this research was the *Fixed Effect Model* method.

2. Hausman Test

This test was conducted to choose between *Fixed Effect* and *Random Effect*. If it turns out that the *Hausman* test results accept the null hypothesis, it can be concluded that the best model to use is the *Random Effect*. On the other hand, if the *Hausman* test results reject the null hypothesis, the best model to use is the *Fixed Effect* model.

Table 8 Hausman test

Test Summary	Chi-sq Statistics	Chi-sq df	Prob.
Cross-Section Random	33.825364	3	0.0000**

Note: **= Significant at 5%

Based on the *Hausman* test results in the Table 8, the probability value of *Cross-Section Random* was 0.0000, smaller than 0.05 (5%), so the null hypothesis was rejected. Therefore, it can be concluded that the most appropriate model to be used in this research was the *Fixed Effect Model* method.

Based on the model test carried out, it can be inferred that the most appropriate model to use was the *Fixed Effect Model*. The *Fixed Effect* model is a panel data estimation model that uses a *dummy* variable to determine the difference in intercepts between *cross-sections*. This difference occurs because of differences in each company, such as work culture, managerial, and incentives. This estimation model can also be called the *Least Square Dummy Variable* (LSDV).

The purpose of this LSDV estimation is to reduce the level of heteroscedasticity between *cross-sectional* units. This use is very appropriate to see changes in the data of each variable so that the data can be more dynamic in interpretation.

Based on the estimation results in the Table 9, a panel data analysis model can be made of the factors that affect the local own-source revenue of regencies/cities in Bali Province, which are interpreted as follows:

$$LOG(PAD) = \beta_0 + \beta_1*LOG(PDRB) + \beta_2*LOG(INVESTASI) + \beta_3*LOG(DAU) + et \quad (2)$$

Information: PAD = Local Own-Source Revenue; GDP = Gross Regional Domestic Product; INVESTMENT = Investment; DAU = General Allocation Fund; *et* = *Error* Distribution.

Table 9 Fixed Effect Model Estimation Results

Dependent Variable: Local Own-Source Revenue in Regency/City of Bali Province	Model
	Fixed Effect
Constant (c)	-26.06965
Error standard	1.748927
Probability	0.0000**
LOG(GDP)	1.998092
Error standard	0.194002
Probability	0.0000**
LOG(INVEST)	-0.012744
Error standard	0.012242
Probability	0.3011**
LOG(DAU)	0.652717
Error standard	0.135271
Probability	0.0000**
R^2	0.988002
F-Stats	583.9192
Probability	0.000000*
Durbin-Watson Stat	1.293518

Note: **= Significant at 5%, *= Significant at 10%

The regression results are obtained as follows:

$LOG(PAD) = \beta_0 + \beta_1*LOG(PDRB) + \beta_2*LOG(INVESTASI) + \beta_3*LOG(DAU) + et$

$LOG(PAD) = -26.06965 + 1.998092*LOG(PDRB) + -0.012744*LOG(INVESTASI) + 0.652717*LOG(DAU) + et$ (3)

β_0 = The value of -26.06965 means that when the independent variables, including GRDP, investment, and DAU, are considered constant or do not change, the local own-source revenue in Bali Province is -26.06965.

β_1 = The value of 1.998092 can be interpreted that if GRDP increases by 1%, the local own-source revenue will increase by 1.998092, assuming that other factors are considered constant or unchanged.

β_2 = The value of -0.012744 indicates that if the investment increases by 1%, the local own-source revenue will increase by -0.012744, with the assumption that other factors are considered constant or unchanged.

β_3 = The value of 0.652717 means that if the general allocation fund increases by 1%, the local own-source revenue will increase by 0.652717, assuming that other factors are considered constant or unchanged.

Based on the estimation results in Table 9, panel data analysis was obtained on the factors affecting local own-source revenue (PAD) by regencies/cities in Bali Province, interpreted as follows:

LOG_PAD_JEMBRANA	= -0.192343 (area effect)	–
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_TABANAN	= -0.289815 (area effect)	–
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_BADUNG	= 0.957516 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_GIANYAR	= -0.324892 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_KLUNGKUNG	= 0.885595 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_BANGLI	= 0.990910 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_KARANGASEM	= 0.125167 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_BULELENG	= -1.352160 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+
LOG_PAD_DENPASAR	= -0.799979 (area effect)	-
	1.998092*LOG(PDRB_JEMBRANA)	+
	-0.012744*LOG(INVESTASI_JEMBRANA)	+
	0.652717*LOG(DAU_JEMBRANA)	+

According to the estimation model results, it can be concluded that there was an effect of *cross-section* variables in regencies/cities in Bali Province on local own-source revenue. Regencies with positive *cross-section* effects or operational areas included Badung regency with a coefficient of 0.957516, Klungkung with a coefficient of 0.885595, Bangli regency with a coefficient of 0.990910, and Karangasem with a coefficient of 0.125167. Meanwhile, for regencies with a negative cross-section effect or operational area effect, there was Jembrana Regency with a coefficient value of -0.192343, Tabanan Regency with a coefficient value of -0.289815, Gianyar Regency with a coefficient value

of -0.324892, Buleleng Regency with a coefficient value of -1.352160, and Denpasar City with a coefficient value of -0.799979.

Based on these results, it can be concluded that Bangli Regency was the area with the most significant *cross-sectional* influence among regencies/cities in Bali Province on local own-source revenue. Meanwhile, the regency with the slightest *cross-section* effect was Jembrana Regency with -0.192343.

Statistic Tests

1. T-Statistic Test

The t-statistical test was carried out to determine the significance between the independent and dependent variables. When performing this t-statistic test, if the probability value is < = 5%, H0 is accepted, indicating that the independent variables do not affect the dependent variable.

Table 10 T-Statistics Test Results

Variable	Coefficient	T-stats	Probability
Gross Regional Domestic Product (GRDP)	1.998092	10.29931	0.0000
Investment	-0.012744	-1.041019	0.3011
General Allocation Fund (DAU)	0.652717	4.825237	0.0000

The Table 10 shows that the investment variable had a probability value of 0.3011, greater than 0.05, and a t-statistic value of -1.041019. It can be concluded that the investment variable had a negative and insignificant effect on local own-source revenue in Bali Province. Meanwhile, the GRDP variable had a probability value of 0.0000, smaller than 0.05, and a t-statistic value of 10.29931. It can be denoted that the GRDP variable had a positive and significant effect on local own-source revenue in Bali Province. In addition, the general allocation fund (DAU) variable had a probability value of 0.0000, smaller than 0.05, and a t-statistic value of 4.825237. Thus, it can be inferred that the DAU variable had a positive and significant effect on local own-source revenue in Bali Province.

2. F-Statistic Test

The F-statistical test was conducted to determine the independent variables' influence on the dependent variable simultaneously or together. The regression can be used if the F-statistical test result is less than 0.05.

Table 11 F-Statistic Results on Fixed Effect Model

Information	Coefficient
R-squared	0.988002
Adjusted R-squared	0.986310
F-statistics	583.9192
Prob (F-statistic)	0.000000
Durbin-Watson stat	1.293518

Based on the Table 11, which is the regression result with *Fixed Effect Model* estimation, it can be concluded that the model had an F-statistical probability of 0.000000, where the F-statistic value was less than 5% (0.05). Therefore, it can be concluded that the independent variables simultaneously or jointly affected the dependent variable.

3. R^2 Test (Coefficient of Determination)

The R^2 test has the objective to measure how far the ability of independent variables can explain the dependent variables and measure the goodness of a model by stating in Figures 0-1. If the value of R^2 is close to 1, all independent variables can explain all the information to predict the dependent variable. However, when R^2 approaches 0, the ability of the independent variables on the dependent variable variation is limited.

Based on the test results, the value of R^2 of 0.988002 means that independent variables influenced the dependent variable of 98.8002%, while 1.1998% was influenced by other variables outside the research.

Classic Assumption Test

1. Heteroscedasticity Test

The heteroscedasticity test aims to determine whether there is an inequality of variance in the regression model from the residuals of one observation to another observation. A regression model can contain heteroscedasticity problems if it has many data variations from the *cross-section* used in a study, so a good regression model is a model that does not contain heteroscedasticity problems.

This heteroscedasticity test must have the overall probability value of the independent variables above 0.05 or 5%, so it can be said that the regression model does not contain heteroscedasticity problems. On the other hand, if the probability value of all independent variables is less than 0.05 or 5%, the regression model contains a heteroscedasticity problem. The following is the heteroscedasticity test results in this study:

Table 12 Heteroscedasticity Test

Variable	Coefficient	Std. Error	T-Statistics	Prob.
C	-20.29958	16.10205	-1.260683	0.2112
LOG(GDP)	4.554096	2.393758	1.902488	0.0608
LOG(INVEST)	0.090141	0.096222	0.936796	0.3518
LOG(DAU)	-2.952007	1.579059	-1.869473	0.0653

It can be seen from the Table 12 that, from the heteroscedasticity test results, it can be concluded that the probability value of all variables was more than 0.05, including the GRDP variable of 0.0608, investment of 0.3518, and DAU of 0.0653. Thus, it can be concluded that this regression model did not contain heteroscedasticity problems.

2. Multicollinearity Test

A multicollinearity test was conducted to see whether there was a high correlation between the independent variables in the regression model. In test multicollinearity, when R^2 the dependent variable is more significant than R^2 between the independent variables, the regression model contains no multicollinearity problems.

Table 13 Multicollinearity Test

	PAD	GDP	INVESTMENT	DAU
PAD	1.0000000	0.734191	0.239648	-0.288618
GDP	0.734191	1.0000000	0.426146	0.114066
INVESTMENT	0.239648	0.426146	1.0000000	0.202618
DAU	-0.288618	0.114066	0.202618	1.0000000

Based on the Table 13, it can be concluded that there was no coefficient between variables with a value above 0.8. Hence, it can be said that the *Fixed Effect Model* in this study did not contain multicollinearity problems.

Conclusion

Based on the research results and discussion on the influence of GRDP, investment, and DAU on local own-source revenue in the regencies/cities of Bali Province in 2010-2019, it can be concluded that the Gross Regional Domestic Product (GRDP) variable had a positive and significant effect on local own-source revenue (PAD). Thus, an increase in the regional Gross Regional Domestic Product (GRDP) will increase local own-source revenue. However, the investment variable had a negative and insignificant effect on local own-source revenue due to the fluctuating annual investment value in each regency/city in Bali Province, so it has not impacted PAD directly. Meanwhile, the general allocation fund (DAU) variable had a positive and significant effect, meaning that an increase in the DAU would increase local own-source revenue.

Suggestion

Based on the research results, suggestions can be conveyed. It is hoped that the government will continue to encourage increasing GRDP in each business sector to increase its local own-source revenue. It can be achieved by exploring the potential of regional tourism objects and improving existing tourism object facilities to attract tourists to visit tourist objects in the regencies/cities of Bali Province. It is also expected that the government can provide policies to increase investment to support high economic growth efforts, such as being more aggressive in encouraging investors to invest. Thus, with many investors, it is hoped to help build or improve tourist attraction facilities in the regencies/cities of Bali Province. Therefore, it will attract tourists to visit and increase local own-source revenue. Even more, it is expected that local governments can make and implement policies that spur an increase in general allocation funds, such as equity in allocating funds to each region in funding regional needs for their contribution to the decentralization implementation to increase local own-source revenue.

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Article Type: Research Paper

Analysis of Social Capital Effect in the Joint Liability Group on the Performance of Sharia Cooperatives in Indonesia

Nurma Yulita* and Amelia Pratiwi

Abstract: This investigation aims to analyze the impact of the joint liability model on the sharia cooperatives' performance in Indonesia. The respondents are several group lending members of sharia cooperatives in Java, the center of sharia cooperatives in Indonesia. This study utilized the purposive sampling method to select samples conducted in April 2021. Data collection was carried out by distributing online and offline questionnaires to several sharia cooperatives utilizing the joint liability model. Data from 98 respondents were further analyzed by PLS-SEM analysis. The results unveiled that joint liability, which was influenced by indicators of trusts, norms, and networks, had a positive and significant effect on sharia cooperatives' performance as measured by members' satisfaction and loyalty. Thus, sharia cooperatives can take advantage of and maintain the joint liability model based on trusts, norms, and networks. The rationale is that the joint liability application has followed cooperative principles: the principle of kinship and cooperation. In addition, such a model has proven to increase the loyalty and satisfaction of sharia cooperative members.
Keywords: Social Capital; Joint Liability Model; Members' Satisfaction; Members' Loyalty
JEL Classification: B55; L31; M14

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Introduction

In general, the cooperative industry has contributed 4.48% to Indonesia's gross domestic product (GDP) in 2017 (Kemenkopukm, 2021). Although this value is small than other industry sectors, the existence of cooperatives is required to meet the needs of community funds, especially SMEs. The location of sharia cooperatives and many SMEs is in rural areas, making it easier for them to cooperate in terms of capital, compared to more Islamic banking in urban areas. In addition, SMEs have been considered high risk for banks, as they cannot meet the general criteria of credit analysis, especially those related to physical collateral (Darsono et al., 2017). Furthermore, banking is generally known to channel more credit to non-SME sectors. The amount of credit for SMEs during 2013-2018 ranged from 18%-20% of the total credit distributed by national banks.

The importance of the role of sharia cooperatives in developing SME businesses is not supported by good performance. Several problems are still looming over the face of Indonesian sharia cooperatives. Kemenkopukm noted that there are still many cooperatives whose performance is not up to par. They often face some classical problems such as the low ability of the cooperative boards and management in managing their business and the lack of members' participation in developing their cooperatives.

BMT is another agent that can help cooperative, which indulges in SMEs. Therefore, the SMEs' capital can be improved by assessing BMT from its various products (Munir et al., 2021). However, as a business entity obliged to improve the welfare of members, sharia cooperatives require not only money but also social capital. In fact, as a member-owned company, sharia cooperatives require more social capital than companies such as investor-owned companies. It determines the performance of sharia cooperatives, not only the performance of administrators and management but also the participation of cooperative members.

Social capital in cooperatives, consisting of trusts, norms, and networks, is often used as a base to build a joint liability group. Although, from a narrow sense, such a mechanism is more frequently associated with efforts to reduce credit risk for cooperatives, it can be a tool to increase the participation of cooperative members. Social capital becomes the glue for people who join a group. Trusts will make works effective. The role of social capital here is to gain trust to join the joint liability group. Networking in social capital can make it easier to join the joint liability group because, in this case, the network is a relationship between prospective members and members who have joined the group. This built network can eventually become a bridge to join the joint liability group.

In the joint liability mechanism, decision-making is performed in deliberation, then the consequences of the decision results are a shared responsibility. However, it is not easy to implement a joint liability model because some people argue that they are not willing to overcome the obligations of others. One of the reasons is that one is trying to make money, but only to pay for other people's installments. There is no family relationship, but a person must be responsible for his obligations. Supposedly, fellow members of the group have mutual trust, feel one part, and help each other. If these can be applied, the joint liability model will be implemented.

The joint liability model can be an asset safety model. If the group loan installment is completed, bad credit will not occur. If sharia cooperative assets are safe, the cooperative will have the ability to improve its services to its members, both in quality and quantity. Thus, when social capital in the joint liability group increases, the performance of the cooperative can also increase.

The joint liability model has been utilized by sharia cooperatives in Indonesia, especially those engaged in financial services and insurance. Joint liability is defined as the responsibility carried out jointly by all members in a group for all obligations to cooperatives based on a sense of openness and mutual trust between them (Supriyanto,

2011). Each member in a group of joint liability is willing to guarantee each other, either temporarily or permanently, if the member cannot fulfill his obligations for various reasons.

In Indonesia, sharia cooperatives often use such a mechanism to minimize the risk of nonperforming loans (Arifin, 2008; Wahyudi & Rustantia, 2017). SME actors, who mostly are the customers of sharia cooperatives, do not have worthy physical assets used as financing collateral. Through the joint liability model, everyone in the group becomes a guarantor for his peers. Accordingly, it can reduce the occurrence of nonperforming loans because if some members cannot fulfill their liabilities, their group peers will pay for the obligation. In addition, applying the joint liability mechanism can mount the cooperation and sense of openness of sharia cooperative members (Çriana, 2013; Mardliyyah & Ryandono, 2020; Rahayu, 2011).

The term joint liability is not familiar in Islam. However, Islamic law has the term kafala, meaning a guarantee given by an insurer to the third party to fulfill the obligations of the second party or the lenders (Antonio, 2001). Therefore, the implementation of the joint liability model has followed two Islamic teachings: deliberation and cooperation in righteousness (Mardliyyah & Ryandono, 2020).

Implementing the joint liability model is classified in the kafala bin nafs, where all members have shared responsibilities

According to Sabiq (1987), kafala must require the presence of kafiil, ashil, makful lahu, and makful bih. Kafiil is a person obliged to meet the demands of makful bih or guarantee object. Kafiil's criteria are mature, reasonable, having authority over his property, and sincere with kafala. Ashil is a person in debt, and Kafiil guarantees his debt. All criteria for Kafiil are not mandatory for Ashil. Meanwhile, makful lahu is the one who gives the debt. The required guarantor must know him. Since humans are not equal in terms of demands, it is meant for ease and discipline. Makful bih is something used as a guarantee; it can be a person, goods, or work.

According to Putnam (1993), social capital is an event that arises from below, coming from several people who form social networks based on trust because of the social contract. Coleman (1988) stated that social capital is the diversity of the different units of the two elements in similarity, which stem from several aspects of social structure and facilitate individual and corporate activities.

According to Riddell (1997), social capital parameters encompass: (1) Trust; Fukuyama (1995) asserted that trust is an attitude of honesty, mutual trust, and trust in each community so that there is a sense of mutual unity and cooperation with others and it contributes to the increase in the value of social capital. (2) Norms; According to Putnam (1993), a norm is formed based on religion, moral guidance, and secular standards in the form of understandings, values, hopes, and goals believed and implemented together with a group of people. (3) Network; Networking on social capital is how the community (between members and administrators or other institutions) can build good internal and

external cooperation. When social networks have been good, it will establish close feelings between members, administrators, and other institutions in working together to achieve goals.

Sharia cooperative is an institution oriented to members, so the main focus on assessing the institution's performance should be on members, not just on financial performance. Social performance is defined as the realization of the social goals of the organization by moving beyond the orientation of transactions to create the welfare of all stakeholders, such as providing essential services to the community, value for members, and being socially responsible (Christen et al., 2004; Karthikeyan, 2013).

Several studies on the measurement of cooperative social performance have been conducted. Dasuki et al., (2016) explained four performance development goals for cooperatives: poverty reduction, existing business growth, job creation, as well as gender equality and women's empowerment.

Dasuki et al. (2016) noted that the use of indicators such as Moody's Social Performance Assessment (SPA) not only upholds investors' commitment to social responsibility but increases financial gain. Further, there is no reputational risk involved when describing the welfare of members, which is not present in other financial institutions.

Measurement of member welfare or improvement of members' quality of life can utilize the Progress out of Poverty Index (PPI). The measurement, which has been used by credit union Keling Kumang (CUKK) since 2011, measures member poverty levels, such as how many heads of families are already above the poverty line and how many of them are still below the poverty line (Munaldus, 2017).

Furthermore, the social performance of a sharia cooperative can be seen from the perspective of members or customers. In this study, the perspective was measured by customer loyalty and customer satisfaction. Members who are satisfied with sharia cooperative services will undoubtedly have a good level of loyalty and satisfaction.

There have been many studies on Islamic cooperatives. However, their scopes are still narrow and limited to the analysis of their financial performance. It encourages researchers to investigate the Indonesian sharia cooperatives, especially those in Java, from a different perspective: their social performance. In particular, this study aims to analyze the impact of joint liability mechanisms on sharia cooperatives' performance in Indonesia.

Research Method

Population and Sample

In answering the research question, the study employed a quantitative approach, a method that examines a specific population or sample level to describe and test

hypotheses (Sugiyono, 2017). The research population is all sharia cooperatives in Indonesia, amounting to 4,046, with the target population being sharia cooperatives operating in Java.

The sample was selected using the purposive sampling method, which requires many things, namely 1) sharia cooperatives are certified cooperatives and get an A rating from the Ministry of SMEs, 2) sharia cooperatives use the joint liability mechanism in lending. Respondents asked for data and information were members of sharia cooperatives who were also members of the joint liability group, who had joined the group for at least one year.

Given the unavailability of data on the number of all members of the joint liability group in Java, the determination of the number of respondents using the Lemeshow formula is as follows: $n = Z^2.P(1-P)/d^2$, where n is the sample number, Z is the confidence level of 1.96, p represents the maximum estimate of 0.5, and d is the sampling error by 10%. The formula obtained a value of 96 respondents.

Data Collection Technique

The data were collected through the dissemination of questionnaires. The questionnaire instruments were graded on a 4-scale Likert, which varied from “Strongly Agree” to “Strongly Disagree.” This instrument was distributed to respondents through social media using a google form and distributed manually through sharia cooperatives sampled.

Descriptive Analysis

The data obtained were univariately screened using descriptive analysis to discover the missing values and obtain an idea of the characteristics of respondents. Then, for hypothesis testing using Bootstrapping, the data were analyzed using PLS-SEM analysis with the SmartPLS 3.0 application.

Outer Model Testing

The outer model is a measurement model used to assess the validity and reliability of an indicator (Hartono & Abdillah, 2014). It tests the construct validity and reliability of each item, indicator, or construct. Construct validity tests include convergence and discriminant tests. An indicator or item is said to be valid if it meets the criteria of convergent validity test with a loading score of > 0.7, but the interpretation of the loading factor value > 0.55 can also be said to be valid (Dante M. Pirouz) if the value of P < 0.1 and the value of AVE > 0.5. The discriminant validity test was conducted by comparing the square root value of each construct with the correlation coefficient between constructs. As for the reliability test, the composite reliability value must be > 0.7, and Cronbach’s alpha should be > 0.6.

Inner Model Testing

The R^2 value for the inner model was analyzed through the goodness of fit test. The inner model test checked the R^2 value for the dependent variable and the path coefficient value for the independent variable. Significance tests applied T-statistics for each track (Hartono & Abdillah, 2014). A more significant R^2 value indicates a greater variance of changes in the dependent variables, which independent variables can explain in the inner model. The criteria employed in analyzing the path coefficient or T-statistical value of the inner model is that the T-statistical value is greater than the t-table, the t-table value with 10% alpha is 1.65 for the two-tailed test.

Research Hypothesis

The hypotheses in this study are as follows:

***H_1**: Trust positively and significantly affects the joint liability model.*

***H_2**: Norms have a positive and significant effect on the joint liability model.*

***H_3**: Network has a positive and significant influence on the joint liability model.*

***H_4**: Joint liability model has a positive and significant effect on the performance of sharia cooperatives.*

Result and Discussion

Respondents in this study were members of sharia cooperatives who have joined the joint liability group for at least one year. Questionnaires were distributed online and offline to speed up data collection time. The results obtained 98 respondents who filled out the questionnaire in full.

Descriptive Analysis

The collected data were analyzed with descriptive analysis to obtain an overview of respondents. The result is as follows.

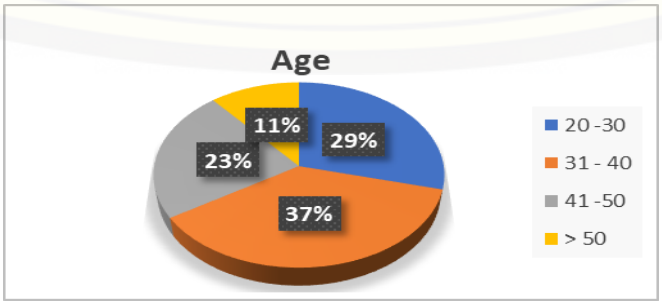

Figure 1 Characteristics of Respondents based on Age

Figure 1 demonstrates four groups of respondents' age, i.e., 20 - 30 years, 31 - 40 years, 41 - 50 years, and more than 50 years. The data indicate that most respondents aged 31 - 40 years, amounting to 36 people or 37%. Furthermore, few respondents were above 50 years old, totaling 11 people or 11%. To sum up, most members of the sharia cooperative/BMT/KJKS/KSPPS joint liability group were 31- 40 years old.

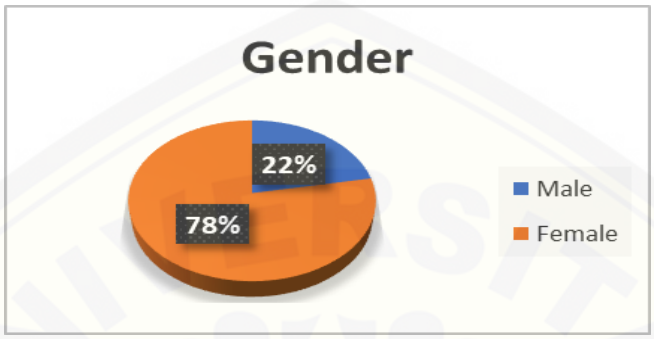

Figure 2 Characteristics of Respondents based on Gender

Figure 2 displays the characteristics of respondent profiles based on gender, where female respondents totaled 76 people or 78%, and male respondents amounted to 22 people or 22%, implying that respondents of the female sex are more dominant than males.

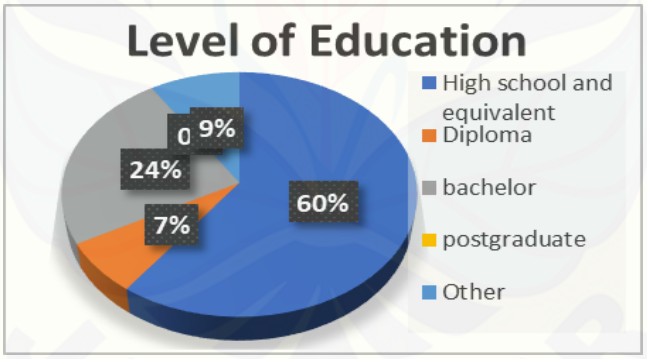

Figure 3 Characteristics of Respondents based on Education Level

Figure 3 exhibits five classifications of respondents' education level: high school and equivalent, Diploma, Bachelor, Postgraduate, and Others. Most respondents had an education level of high school and equivalent, amounting to 59 people or 60%, seven people or 7% had Diploma, those with a Bachelor education level totaled 23 people or 24%, other education levels amounted to nine people or 9%, and there were no respondents with a Postgraduate education level. In short, respondents' education level has been dominated by high school and equivalent.

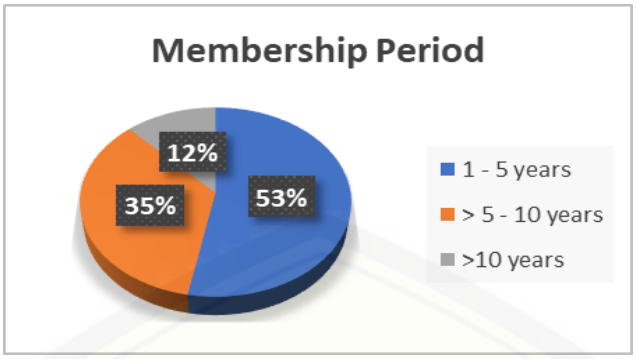

Figure 4 Characteristics of Respondents based on Membership Period

In Figure 4, the membership period of respondents joining sharia cooperatives/ BMT / KJKS / KSPPS is divided into three: 1 - 5 years amounting to 52 people or 53%, more than 5 - 10 years amounting to 34 people or 35%, and over ten years totaling 12 people or 12%. The data signify that most respondents had a membership period of 1-5 years in sharia cooperatives.

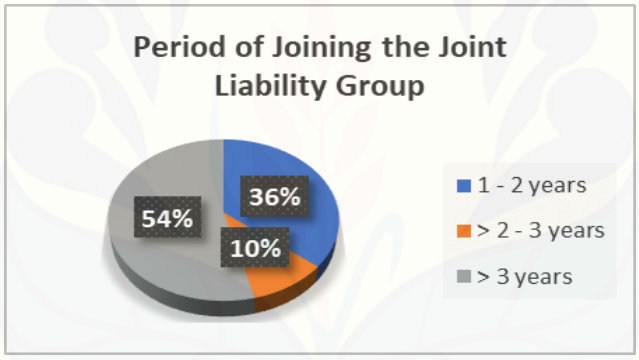

Figure 5 Characteristics of Respondents based on the Period of Joining the Joint Liability Group

Figure 5 illustrates the respondents' period of joining the joint liability group divided into three: 1 - 2 years amounting to 35 people or 36%, more than 2 - 3 years amounting to 10 people or 10%, and over three years amounting to 53 or 54%. In other words, most respondents have joined the joint liability group for more than three years.

Outer Model Testing

The test was conducted using SmartPLS 3.0 software from the calculation results with the PLS algorithm and produced outer models as depicted in Figure 6. The outer model was designed by testing validity and reliability. The validity test consisted of two types: convergent validity and discriminant validity.

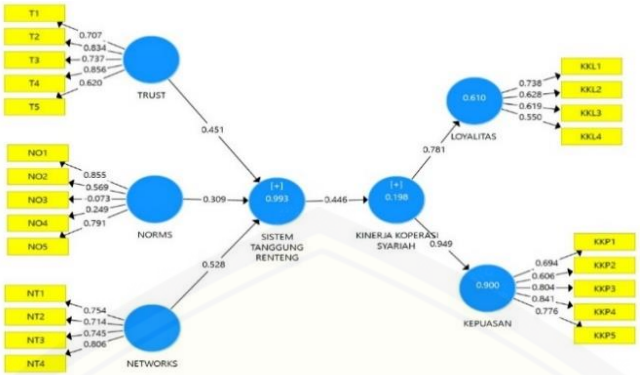

Figure 6 Output Outer Multidimensional Construct Model

In convergent validity, tests were seen in loading factor values and Average Variance Extracted (AVE). Figure 6 displays five Trust indicators, five Norms indicators, four Networks indicators, four Loyalty indicators, and five Satisfaction indicators. For the indicator to be valid, the loading factor must be more than 0.55. Hence, values that do not meet the standard must be issued or eliminated. The researchers issued indicators NO3, NO4, and KKL4, as seen in Figure 7.

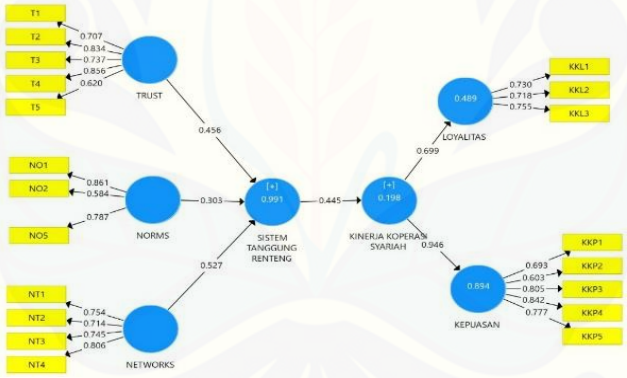

Figure 7 Output Outer Model after Loading Factor Selection

Figure 7 depicts the outer output of the model after selecting the loading factor with a value of more than 0.55. Then, the indicator with a loading factor value of no more than 0.55 was deleted, and the data were reprocessed and produced output as in the image so that the data became valid because the loading factor value was > 0.55.

Table 1 Average Variance Extracted (AVE)

Construct	*Average Variance Extracted* (AVE)
Trust	0,571
Norms	0,567
Networks	0,571
Loyalty	0,540
Satisfaction	0,561

Convergent validity tests were assessed from average variance extracted (AVE), where the value should be above 0.5. Following Table 1, the AVE value of each variable is more than 0.5. After that, the discriminant test of validity criteria was performed, discovering a square root value of AVE higher than the correlation value between constructs. The outer results are displayed in the following table.

Table 2 Discriminant Validity

Construct	Satisfaction	Loyality	Networks	Norms	Trust
Satisfaction	0.749				
Loyality	0.444	0.735			
Networks	0.392	0.220	0.756		
Norms	0.365	0.140	0.536	0.753	
Trust	0.338	0.118	0.393	0.193	0.756

Table 2 indicates that the square root values of AVE (0.749, 0.735, 0.756, 0.753, and 0.756), where the value is more than each construct or the root value AVE, is more significant than 0.5. In other words, the measurement model is valid since it has met convergent and discriminant validity. The measurement of the construct reliability test was seen from the composite reliability value of the indicator block that measured the construct.

Table 3 Composite Reliability

Construct	Composite Reliability
Trust	0,868
Norms	0,793
Networks	0,842
Loyalty	0,779
Satisfaction	0,863

The results of composite reliability output in Table 3 demonstrate that all variables have met the reliable criteria. The composite reliability value was above 0.7. In short, the list of overall statement items of variables was reliable to measure each variable.

Inner Model Testing

After the data measurement results were valid and reliable, the structural model (inner model) testing was conducted to test the hypothesis by Bootstrapping. The following table describes the structural or inner model evaluation on PLS using an R-square table.

Table 4 R-square

	R Square	R Square Adjusted
Joint Liability System	0.991	0.991
Sharia Cooperative Performance	0.198	0.189
Satisfaction	0.894	0.893
Loyality	0.489	0.484

Table 4 illustrates that the R-Square value on the Joint Liability Model variable is 0.991, meaning that 99.1% of joint liability model variables were influenced by social capital as measured by trust, norm, and network variables. Then, 0.9% of joint liability model variables were affected by other variables not measured in the study.

The R-square value on the sharia cooperative performance variable was 0.198, indicating that 19.8% of sharia cooperative performance variables were affected by the joint liability mechanism, and the other 80.2% were influenced by other variables not measured in this study. The performance of sharia cooperatives was measured using the indicator of satisfaction and loyalty seen from the value of R^2. It obtained influence of satisfaction indicators of 0.894 or 89.4% and loyalty of 0.489 or 48.9%.

Hypothesis testing aimed to determine the significant rate between variables, both the T-statistic and P-value. If the T-statistic has exceeded the t-table, the P-value will automatically be significant. Testing research hypotheses was carried out based on P-Value or T-Statistics of the quality relationship of data processing results. The testing criterion is to reject the hypotheses if t < 1.65 or P > 0.1 and accept them if t > 1.65 or P < 0.1. The results of hypothesis testing can be seen in the Table 5.

Table 5 Results of Hypothesis Testing

	Original Sample	T-Statistic	P-Value
Trust --> Joint Liability System	0.456	5.632	0.000
Norm --> Joint Liability System	0.303	5.157	0.000
Network --> Joint Liability System	0.527	8,843	0.000
Joint Liability System --> Sharia Cooperative Performance	0.445	4.419	0.000

The Table 5 displays the original sample values (β), T- statistics, and P-values. The discussion of the test results of each hypothesis is as follows.

Trust positive and significant influence on the joint liability mechanism

The coefficient test on the parameters unveiled a P-value of 0.000 (below 0.1), an Original sample value (β) of 0.456 (the value indicates a positive direction), and a T-statistics value of 5.632 (greater than 1.65). It indicates that the trust had a positive and significant influence on the joint liability mechanism, with a significance level of 10%. Then, both values met the requirements of H_1 acceptance, suggesting that trust can influence the joint liability model. Thus, H_1 was "accepted". The joint liability model is a method or mechanism; hence, the variable could not be measured directly, causing the trust in a group to be used to measure the joint liability mechanism. Trust could

facilitate exchanging opinions, integrity, and commitment in cooperating between members of the joint liability group. Cooperating the nature of individualism between group members with a trust may build relationships of willingness and mutual assistance.

When group members have lost their trust in peers, it will result in the length of loan payments. Islamiyati & Nugraeni (2014) stated that credit agreements provided by cooperatives as creditors without a guarantee are only given to their members based on trust. Therefore, trust is an essential value in a relationship. Gambetta (2000) described that collective action based on high trust would increase people's participation in various forms and dimensions, especially in building mutual progress and economics.

The results of this study support research conducted by Imaniah (2016) on the role of social capital in the sustainability of cooperative businesses, that trust has a role in reducing the cost of control and monitoring and improving the efficiency of the Al-Wardah Saving and Credit Cooperative. Trust can facilitate cooperating, mutual assistance, exchange opinions, and others. Hence, maintaining trust can make it work effectively. The role of trust here is to gain trust to join a joint liability group.

Norms have a positive and significant effect on the Joint Liability Model

The coefficient test on the parameters acquired a P-value of 0.000 (below 0.1), an Original sample value (β) of 0.303 (the value indicates a positive direction), and a T-statistics value of 5.157 (greater than 1.65), meaning that norms had a positive and significant effect on the joint liability model, with a significance level of 10%. Both values were eligible for H_2 acceptance, suggesting that norms can affect the joint liability model positively and significantly. Hence, H_2 was "accepted". It signifies that the joint liability model is a method; thus, the variable could not be measured directly, making the norms in the group to be used to measure the joint liability model. Norms resulted from deliberation between group members, where there could be two possibilities, rejection or acceptance of a norm becoming a standard norm. Good norms created by companies could affect the joint liability model in a sharia cooperative.

The results of this study support the research conducted by Imaniah (2016) on the role of social capital in cooperative business continuity, that norms become the guidelines or instructions of cooperatives in acting and improving human resources (HR) of the Al-Wardah Saving and Credit Cooperative. Therefore, sharia cooperatives must focus on these factors to build better norms and mutually beneficial relationships among joint liability group members. According to Wolfe in Alfitri (2011), trust sources refer to norms, especially about members' compliance on various everyday obligations that have become unwritten agreements on the group. Coleman (1990) stated that norms are the things that determine what is right and what is wrong. Therefore, joint liability group members must adhere to the norms agreed upon by the group. The rules, norms, obligations, reciprocity, and trust are embedded in social relations, social structure, and society's institutional arrangements enable members to achieve their individual and community objectives (Narayan-Parker, 1997).

Network positive and significant effect on Joint Liability Model

The coefficient test on the parameters discovered a P-value of 0.000 (below 0.1), an Original sample value (β) of 0.527 (the value indicates a positive direction), and a T-statistics value of 8,843 (greater than 1.65). In other words, the network had a positive and significant effect on the joint liability mechanism, with a significance level of 10%. Both values were eligible for H_3 acceptance, showing that the network can significantly measure the joint liability mechanism. Therefore, H_3 was "accepted". It means that the joint liability mechanism is a method or mechanism. Hence, the variable could not be measured directly, so the network in the group was used to measure the joint liability mechanism. The built network could be a bridge to join the joint liability group.

This study is in line with research conducted by Imaniah (2016) on the role of social capital in the sustainability of cooperative businesses that the network has facilitated the addition of capital and new members. The role of a network in social capital can ease joining a joint liability group because, in this case, networking is a relationship between prospective members and members who have joined the group. Maskell and (Doh & Zolnik, 2011) mentioned that social capital contributes to entrepreneurship because high levels of social capital can reduce transaction costs between actors, cost of information seeking, bidding, and decision-making. Previous research has categorized such capital into several dimensions in identifying social capital. The dimension of social capital, such as the support in financial, network, and moral received by respondents, has become one of the crucial factors in the sustainability of SMEs (Prasetyo, 2013).

Influence of Joint Liability Model on Sharia Cooperative Performance

The coefficient test on the parameters obtained a P-value of 0.000 (below 0.1), an Original sample value (β) of 0.445 (the value indicates a positive direction), and a T-statistics value of 4,419 (greater than 1.65). It implies that the joint liability model had a positive and significant effect on the performance of sharia cooperatives, with a significance level of 10%. Both values were eligible for H_4 acceptance, indicating that the joint liability model has a positive and significant influence on the performance of sharia cooperatives. Thus, H_4 was "accepted." It means that the joint liability model could improve the performance of sharia cooperatives, measured by indicators of loyalty and satisfaction.

The results of this study align with the research conducted by Zainab (2020) that the joint liability model, as measured by the ethical values of trust, responsibility, deliberation, and discipline, positively affected the observance of credit payments. According to Sofwatama et al. (2017), optimizing services could increase the loyalty and interest of members in utilizing products. In this study, the improvement of services in the joint liability model could improve the performance of sharia cooperatives in the form of loyalty and member satisfaction. Improving the quality and quantity of service following what is desired and required by members will make them loyal and satisfied.

Moreover, Sutrisno et al. (2017) concluded that members' assessment of service quality, trust, and cooperative image positively affects member loyalty through member satisfaction.

Conclusion

This study aims to discover aspects of social capital in a group of joint liability affecting the performance of sharia cooperatives in Indonesia. Ninety-eight respondent data collected by distributing questionnaires were analyzed with PLS-SEM analysis. The results unveiled that trusts, norms, and networks positively and significantly affected the joint liability model. Furthermore, the analysis discovered that joint liability positively and significantly affected the performance of sharia cooperatives as measured through loyalty and satisfaction.

The trust could facilitate exchanging opinions, integrity, and commitment in cooperating among members of the joint liability group. Meanwhile, the norm variable also positively and significantly influenced the joint liability model. It means that the higher the norm value, the better the application of the joint liability model. Furthermore, the results of this study have proven that networks positively and significantly influenced the joint liability model. In short, the stronger the networks built, the easier it is to join the joint liability group.

The results uncovered that the joint liability model had a positive and significant effect on the performance of sharia cooperatives as measured through loyalty and satisfaction. In other words, the joint liability model can make sharia cooperative members loyal and satisfied with the services provided.

Limitations

This research has many limitations; therefore, further studies, of course, are expected to be improved and developed to obtain better results. Some limitations in this study are as follows. The research objects were only six sharia cooperatives/ BMT /KSPPS because many have not implemented the joint liability model during the COVID-19 pandemic. The content and form of questionnaires in this study are far from perfect. Thus, it needs follow-up to maximize the study results.

Suggestion

For sharia cooperatives, it is advisable to utilize values of trust, norms, and networks to measure and maintain the joint liability model. The application of this joint liability model focuses on the principle of sharia cooperatives, namely the principle of family and mutual assistance. Implementing an excellent joint liability model can also increase the loyalty and satisfaction of sharia cooperative members.

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Article Type: Research Paper

Willingness to Pay for Destination Quality Improvement: Case Study of Baru Beach, Yogyakarta

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Abstract: This study aims to analyze the willingness to pay visitors for the quality improvement of Baru Beach. The respondents of this research are visitors in Baru Beach. This study uses the contingent valuation method (CVM). Accidental techniques were used to collect data from 150 tourists in Baru Beach. This paper found that the average value of willingness to pay (WTP) is IDR15,000 obtained using dichotomous choice. In addition, variables of age, income, education level, frequency of visits, and visitor perceptions were positive to WTP. Distance and marital status have no significant effect.

Keywords: Willingness to Pay; Contingent Valuation Method; Economic Valuation
JEL Classification: L83, Z32

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Introduction

Indonesia is an archipelagic country, where the water area is wider than the land area. Indonesia is also rich with diverse flora and fauna and abundant natural wealth. They are coupled with the diversity of culture, so the attractiveness of Indonesian tourism is enormous. The long coastline has the potential for abundant natural resources. Biological potential samples are fisheries, mangroves, and coral reefs. At the same time, non-biological potentials include minerals, mining materials, and tourism. The sea is the starting point for rivers carrying various pollutants from land. The transfer of marine functions is a problem for the state and the international community. Marine pollution causes changes in marine biodiversity and reduces the beauty of the oceans.

According to Spillane (1991), tourism is a trip that aims to get pleasure, seek satisfaction, know something, improve health, enjoy sports or rest, perform tasks, make pilgrimages, and others. Tourism is one example of a superior sector that can help in boosting the country's economic growth. Tourism can help encourage regional income (PAD) derived from taxes, accommodation, and redistribution. Foreign tourists who vacation to the tourist spot can also bring foreign exchange. Indonesia has many different cultures in each region. One way to introduce the culture is through the tourism sector. In addition to helping the government improve the economy, tourism also helps increase the income of the surrounding community.

The development of tourist attractions will be much development in the area, such as road builders and hotels. In addition, the tourism industry can also benefit the community by opening new jobs, such as helping to develop and preserve the tourist attraction. It also helps local governments to reduce the unemployment rate in the area. Plus, the knowledge of the benefits of tourism, the government began to realize the benefits that will be obtained in the long term from the existence of the tourism sector. If everything is done with the importance of various aspects, such as preserving the environment, it will be beneficial.

Indonesia has a lot of stunning tourism objects, plus much cultural diversity in it. The Special Region of Yogyakarta is one of the areas known as the city of culture. Besides that, Yogyakarta also has stunning tourist attractions and is still thick with its natural sustainability. The number of tourist visitors in the Special Region of Yogyakarta from 2015-to 2019 has consistently increased. It can be seen that 2019 reached 28,324,394 dominated by domestic tourists. In the five years, the increase in the number of tourist visitors in Yogyakarta Province is significant, which almost reaches 10,000,000 tourists.

Each tourist attraction always has its attractions and characteristics in each area. It is what makes the attraction of tourists to travel to the attraction. If a tourist attraction does not have attractions and characteristics, tourists will be reluctant to vacation to the attraction. Therefore, the attraction and characteristics of a tourist attraction will help increase tourists to the attraction. This increase in tourists will positively impact the economy of the tourist attraction area.

The Special Region of Yogyakarta has several districts, including Bantul Regency. Bantul Regency is one of the districts with many tourist attractions still considered beautiful—starting from the hills, plantations, beaches, and others. The number of tourist visitors who visit the Bantul Regency every year tends to be fluctuating. In 2017 the number of tourist visitors in Bantul Regency reached 9,141,150 visitors. However, the interval of two years, namely 2019, experienced a decrease in visitors above 1,000,000 visitors. This decrease in the number of visitors may result from managing less than optimal attractions and may also be due to many other factors.

Tourist attractions located in Bantul Regency have a beautiful natural beauty. These attractions have their uniqueness and characteristics to charm many tourists. Baru Beach is one of the beaches located in Bantul Regency, the Special Region of Yogyakarta. It has slightly different characteristics from other beaches located in Bantul Regency. Shrimp fir trees located along the beach make Baru Beach feel shady and cool, and they are also dozens of windmills that serve as the main power plant in the area. The number of Baru Beach visitors in 2019 is quite volatile. In certain months, the number of visitors has increased significantly. For example, it reached 8.260 visitors in June, and in December, it reached 4,370 visitors. The increasing number of visitors will affect the environmental conditions in the tourist attraction. So, it is necessary to improve the environment and the quality of Baru Beach attractions to maintain natural sustainability around the beach.

Researchers use non-market goods techniques to research the environment because tourist attractions do not have market value. In non-market goods, economic valuation is obtained by estimating the magnitude of monetary value against trade-offs experienced by a person for his willingness to pay for goods or services that have no market value. Stated preference techniques become the basis of assessment techniques, where willingness to pay values are obtained directly. Stated preference techniques rely on values expressed or given by individuals (Fauzi, 2006).

Willingness to Pay value is obtained from visitors to Baru Beach attractions to improve the quality of these attractions. To find out how much Willingness to Pay is worth, researchers use the Contingent Valuation Method (CVM). Contingent Valuation Method is a method that uses survey techniques to ask people directly about the value or price they will give to commodities that do not have a market, such as environmental goods (Prasetyo & Saptutyningsih, 2013). Contingent Valuation Method has advantages including; This method can be applied to all conditions and has two essential things: to estimate the benefits and be applied to environmental policies. The Contingent Valuation Method can also be used as an appraiser of various environmental goods around the community. This method can estimate the value of non-users, which allows one to measure the utility of the use of environmental goods even though the goods are not used directly and the results of research with this method are easy to analyze or elaborate on.

Research Method

This research was conducted in Bantul Regency, Special Region of Yogyakarta. The research object used was Baru Beach, with visitors to Baru Beach and the surrounding community as the research subject from August 23-August 31, 2021. The type of data used for this study was primary data by interviewing directly to the subjects using questionnaires that researchers prepared.

The sample is part of the number and characteristics possessed by that population (Sugiyono, 2007). The sampling technique used in this study was accidental sampling. Meanwhile, random sampling is a technique based on chance, i.e., anyone who happens to meet with a researcher can be used as a sample if a person is seen as suitable as a data source. To determine the number of samples in the study, the researchers used the following formula developed by Slovin:

$$n = \frac{N}{1 + N(e)^2}$$

Information:
n= Number of samples; N= Number of visitors; e= Standard error of 0.1 (10%)

Using the Slovin formula above, the calculation samples number to be used in this study is as follows:

$$n = \frac{32.593}{1 + 32.593(0.1)^2}$$
$$n = \frac{32.593}{1 + 325.93}$$
$$n = \frac{32.593}{326.93}$$
$$n = 99.69$$

Based on the calculation results above, the samples obtained amounted to 99.69, rounded to 100 respondents. To increase data variation and avoid errors in filling in the data, the number of samples used by the researchers was as many as 150 respondents.

Then, the technique used to collect data in this study was interview techniques, in which the researchers did ask questions prepared for respondents, namely visitors to Baru Beach and the surrounding community. The results of this interview helped researchers get information from respondents.

In this study, willingness to pay is defined as a person's willingness to pay a predetermined value to improve facilities and environmental conservation. The value of willingness to pay was calculated from the average value of willingness to pay (EWTP) by the respondents, in which the overall value of willingness to pay would then be summed and divided by the number of respondents. Here, the willingness to pay variable was a dummy variable, where 1 indicated a willingness to pay EWTP, while 0 was not willing to pay EWTP.

On the other hand, binary logistic regression is a proper analytical method for finding out the relationship of response variables (y) to binding variables (x) that are dichotomous (yes or no) or polytomous (more than two answers) (Hosmer & Lemeshow, 1989). The response variable results are divided into two options with different values: 0 = no and 1 = yes. This analysis is the same as multiple regression analysis. The difference between binary logistic regression analysis and multiple regression analysis, i.e., its variable bound is dummy variables (0 and 1), and there are no classical assumptions in binary logistic regression analysis.

In this research, the method used was the contingent valuation method (CVM). The contingency contingent method is a survey method, where the researchers jumped directly to find out WTP and get respondents' information. The EWTP results can determine the willingness to pay responses employing dichotomous choice. The dichotomous choice is a way to search for data by asking respondents a choice question (yes or no) and estimating the respondent's willingness to pay for an evacuated item for a fixed amount of money (Boyle, 1990). To estimate the expected probabilistic model of value, responses from respondents were later used.

To analyze willingness to pay, it can be formulated as follows:

WTP = *f* (Age,Inc,Edu,Jr,Freq,Sp,Persep)

Then, the function is expressed in the form of:

WTP = β_0+ β_1Age + β_2Inc + β_3Edu + β_4Jr + β_5Freq + β_6Sp + β_7Persep + e

Information:

WTP = Willingness to pay; β_0 = Constant; $\beta_{1...}$ β_7= Regression coefficient; Age= Age (Year); Inc= Income (Rupiah); Edu= Education (Years); Jr= Distance (Km); Freq= Frequency of visitors; Sp= Marital status (Dummy); Persep= Visitor perception (Dummy); e= *Error.*

Then, the value of this WTP was summed and divided by the number of respondents. The WTP average is formulated as follows:

$$\text{EWTP} = \frac{\sum_{i=1}^{n} \text{WTP}i}{n}$$

Information:
EWTP= Estimated average willingness to pay; WTP*i*= Willingness to pay value at *I; n*= Number of respondents

The value of the willingness to pay dummy variable is one if "WTP=EWTP" and 0 if "WTP≠EWTP." The expected primary data results would be processed utilizing SPSS software and binary logistic regression analysis.

Based on empirical studies, the equation model in this study is as follows:

$$\text{Log}\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1\text{Age} + \beta_2\text{Inc} + \beta_3\text{Edu} + \beta_4\text{Jr} + \beta_5\text{Freq} + \beta_6\text{Sp} + \beta_7\text{Persep} + e$$

Information:

P= Willingness to pay for development and quality improvement (If *p* = 1, the respondent is willing to pay; if 1-p = 0, the respondent is not willing to pay.); β_0= Constant; $\beta_{1...}$ β_7= Regression coefficient; Age= Age; Inc= Income; Edu= Education; Jr= Distance; Freq= Frequency of visitors; Sp= Marital status; Persep= Visitor perception; e= Error.

Classification Determination Test

The 2 x 2 classification test calculates the estimated value of the correct and incorrect data. The column estimates two approximate values of dependent variables, while rows estimate the actual observation value of dependent variables. If the model is perfect, all cases will be diagonal, with a 100% predicted accuracy rate.

Model Literature Test

Nagelkerke R Square Test

Using Nagelkerke R Square, the authors could see the results of the logistic regression data. The benefits of this test are that it can tell the magnitude of the value of the free variable component and explain the bound variable. Independent variables can receive almost all the information used to predict dependent variables if the Nagelkerke R Square value is close to one.

Hosmer and Lemeshow Test

The value of this test is used to see the Wald test or regression feasibility test as measured by the chi-square value. This test is also used to test the data being examined, whether it matches the model, and there is no difference between the fit model and the data. The Hosmer and Lemeshow data results are seen from the test results. If the Hosmer and Lemeshow values are more than 0.05, H_1 is accepted, and H_0 is rejected, which means a match between the model and the data studied. Conversely, if the Hosmer and Lemeshow values are less than 0.05, H_0 is accepted, and H_1 is rejected, meaning no match between the model and the data studied.

Significance Test

Simultaneous Significance Test

Simultaneous significance tests are seen from the omnibus test, later used to determine whether independent variables influence dependent variables. The study used 5 percent (5%) alpha. H_1 is accepted if at least one variable affects a dependent variable, and H_0 is accepted if no independent variable affects the dependent variable. H_0 is rejected if the chi-square count > the chi-square table or the significance < alpha. To determine the simultaneous results of independent influence on dependent variables, the coefficient model's omnibus test was used.

Partial Significance Test

Partial significance tests are used to determine the effect of independent variables on dependent variables. If the significance value > 0.05, the independent variable affects the dependent variable. Conversely, if the significance value is < 0.05, the independent variable does not affect the dependent variable. The Exp column (B) shows the extent of the increase in one unit odds ratio size. Odds ratios are used to measure the magnitude of each event's risk and the effect exerted by independent variables against dependent variables. To calculate the odds ratio, the antilog of the estimated coefficient is found; after that, it is reduced by one and then multiplied by 100. The results of this calculation show changes in the movement of each independent variable.

Result and Discussion

Descriptive Analysis of Statistics

Based on the research conducted by researchers related to willingness to pay (WTP) for the improvement of the quality of Baru Beach attractions in Bantul Regency, Special Region of Yogyakarta, the descriptive analysis results can be seen in detail in Table 1.

Table 1 Descriptive Statistics for Each Variable

	N	Minimum	Maximum	Mean	Std. Deviation
Age	150	20.00	50.00	27.5600	7.227
Income	150	1000000.00	15000000.00	3120333.3333	2318484.93
Education	150	12.00	19.00	13.9867	2.421
Distance	150	5.00	200.00	30.1800	16.554
Frequency of visitors	150	1.00	4.00	1.7667	0.814
Marital status	150	0.00	1.00	0.3800	0.487
Perception	150	0.00	1.00	0.9400	0.238
WTP	150	0.00	1.00	0.7467	0.4363
Valid N (listwise)	150				

Table 1 shows that most variables had a standard deviation value below the average value. Thus, it can be said that all variables were good, and the spread of the questionnaire was well indicated and standardized evenly.

Classification Determination Test

The classification determination test aims to determine the regression model's determination in predicting the opportunity of respondents' choice of willingness to pay for the improvement of the quality of Baru Beach attractions in Bantul Regency, Special Region of Yogyakarta.

Table 2 Classification Determination Test

Observed			Predicted		
			WTP		Percentage Correct
			Not Willing	Willing	
Step 1	WTP	Not Willing	22	16	57.9
		Willing	9	103	92.0
	Overall Percentage				83.3

The classification determination test results can be seen in Table 2, showing that predictions of willing to pay WTP were 119 respondents, but the actual observation results of willing to pay WTP were 113 respondents. For prediction results that were not willing to pay WTP of 31, the actual observation results that were not willing to pay WTP amounted to 37 respondents. In addition, a prediction accuracy percentage of 83.3% indicates that this logistic regression model was entirely accurate.

Model Conformity Test

Nagelkerke R Square Test

This test determines the percentage range of fit models, with values ranging from 0 to 1. If the value of Nagelkerke R Square is 0, there is no relationship between the bound variable to the free variable. Meanwhile, if the Nagelkerke R Square value is 1, there is a relationship between the bound and free variables.

Table 3 Nagelkerke R Square Test

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	113.749[a]	0.312	0.460

Table 3 displays the Nagelkerke R Square test results of 0.460, meaning that free variables could explain 46% of bound variables, and the remaining 54% could be explained by variables outside the study model.

Hosmer and Lemeshow Test

This test is conducted to find out the null hypothesis that the empirical data matches the model, thus showing the feasibility of the regression model. If the resulting value is more significant than 0.05, the model can predict its observation value, or the model is acceptable.

Table 4 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.253	8	0.730

Table 4 presents that the Hosmer and Lemeshow test result was 5.253, with a sign of 0.730 > 0.05. It can be interpreted that the model could predict the value of its observation, or the model was acceptable since it matched its observation data.

Significance Test

Simultaneous Significance Test

This test determines whether free or independent variables affect bound or dependent variables simultaneously or jointly. If the significance value > 0.05, all free variables simultaneously do not affect the bound variable. Conversely, if the significance value is < 0.05, the free variable simultaneously affects the bound variable or at least one free variable that affects the bound variable.

Table 5 Simultaneous Significance Test

		Chi-square	df	Sig.
Step 1	Step	56.041	7	0.000
	Block	56.041	7	0.000
	Model	56.041	7	0.000

In Table 5, it can be seen that the simultaneous significance test result with Chi-square model value was 56.041, with sig values of 0.000 < 0.05. Then, it can be said that free variables simultaneously affected bound variables, or there was at least one free variable affecting bound variables. Thus, the hypothesized model was fit with the data.

Partial Significance Test

This test determines whether the variable is partially free or independent or affects the bound or dependent variable. If the significance value > 0.05, the independent variable does not affect the dependent variable. Conversely, if the significance value is < 0.05, the independent variable affects the dependent variable.

The value of willingness to pay in this study used dichotomous choice (yes = 1 or no = 0) resulting from bidding games to 15 respondents with an average willingness to pay (EWTP) result of IDR 15,000. The value of the dummy dependent variable WTP is 1 if WTP = IDR 15,000 and 0 if WTP ≠ IDR 15,000. Here are the partial significance test results:

Table 6 Partial Significance Test

Variable	B	Wald	Exp(B)
Age	0.195	6.599	1.215** (0.076)
Income	1.04054E-006	7.464	1.000* (3.80869E-007)
Education	0.279	4.790	1.321** (0.127)
Distance	-0.020	1.862	0.981 (0.014)
Frequency	0.880	8.498	2.411* (0.302)
Marital status	-0.477	0.645	0.612 (0.594)
Perception	2.925	8.302	18.639* (1.015)
Constant	-13.404	19.982	0.000 (2.999)

Description: Variable dependent: WTP (dummy); () indicates the standard error coefficient; *Significant at the level of 1% (α = 0.01); **Significant at the level of 5% (α = 0.05); Significant at the level of 10% (α = 0.10).

Based on the Table 6, independent variables, namely age, income, education level, frequency of visits, and visitor perception, affect the dependent variables, namely willingness to pay improvements in the quality of Baru Beach attractions.

The level of significance in the age variable is 0,010 < 0,05, which indicates that the age variable has a significant effect on willingness to pay for the improvement of facilities and the preservation of Baru Beach attractions. The coefficient value in this variable has a positive influence with a ratio odds value of 1.215. Increasing awareness and increasing age make a person aware of permanently preserving the environment and the higher the

level of concern for the environment to maintain it. It is what makes the age variable positively affect the willingness to pay. This study is in line with research conducted by Akhtar et al. (2017), Sasouli et al. (2017), Vo and Huynh (2017), and Arista and Saptutyningsih (2020), which state that the age variable has a significant effect on willingness to pay to improve the quality of the Baru Beach tourist attraction.

The significance level income variable of 0.006 < 0,01 signifies that the revenue variable significantly affects willingness to pay facility improvements and preserve Baru Beach attractions. The coefficient value in this variable has a positive influence with a ratio odds value of 1,000. It is due to the high level of a person's income so that someone usually brings more funds to travel. Therefore, someone with a higher income level is willing to pay more for improving facilities and preserving the attractions he visits. The results of this study are the same as the results of research conducted by Nallathiga and Paravasthu (2010), Akhtar et al. (2017), Vo and Huynh (2017), Susilowati et al. (2019), Sanjaya and Saptutyningsih (2019), and Arista and Saptutyningsih, (2020) which state that the income variable has a significant effect on willingness to pay to improve the quality of the Baru Beach tourist attraction.

The results of the partial significance test showed that the education level variable had a significant value of 0.029 < 0.05, which can be interpreted that the education level variable has a significant effect on the willingness to pay for facility improvement and preservation of Baru Beach attractions. The coefficient value in this variable has a positive influence with a ratio odds value of 1.321. The higher the level of education, the higher one's knowledge of the benefits of improving facilities and preserving tourism objects so that they are maintained. The higher level of education also creates more advanced thinking on environmental sustainability by knowing the impacts obtained if someone destroys the environment. The results of this study are in line with research conducted by Nallathiga and Paravasthu (2010), Batzias et al. (2012), Akhtar et al. (2017), Sasouli et al. (2017), Zoupanidou et al. (2019), Sanjaya and Saptutyningsih, (2019) and Arista and Saptutyningsih, (2020) which state that the education level variable has a significant effect on willingness to pay to improve the quality of the Baru Beach tourist attraction.

The value of the significance of the marriage status variable from the partial significance test showed 0.422 > 0.05, which can be interpreted that the marriage status variable has no significant effect on the willingness to pay facility improvements and preservation of Baru Beach attractions. Because marital status is not a determinant of someone to carry out tourism activities, someone who is married or unmarried can still carry out tourism activities according to his wishes. This study is in line with research conducted by Priambodo and Suhartini (2016) and Akhtar et al. (2017) which states that the marital status variable has a negative relationship to the willingness to pay in improving the quality of the Baru Beach tourist attraction.

The value of the significance of the distance variable from the partial significance test showed 0.172 > 0.05, which that the distance variable had no significant effect on the willingness to pay for facility improvements and the preservation of Baru Beach attractions. Each individual is different in willingness to pay more, no matter the distance

or near if they already have a goal. This study is in line with Priambodo and Suhartini (2016) and Saptutyningsih and Ningrum (2017), which state that the distance variable has a negative relationship to the willingness to pay to improve the quality of the Baru Beach tourist attraction.

The results of the partial significance test on the visit frequency variable showed a significant value of 0.004 < 0.01 which means that the variable frequency of visits had a significant effect on the willingness to pay for facility improvements and the preservation of Baru Beach attractions. The coefficient value in this variable has a positive influence with a ratio odds value of 2.411. So, it can be interpreted that the higher the frequency of respondents' visits to tourist objects, the respondents are willing to pay more for the improvement of facilities and preservation of the Baru Beach tourist attraction because respondents or visitors can know firsthand the level of development the tourist attraction. The results of this study are in line with research conducted by Saptutyningsih and Selviana (2017) and Sanjaya and Saptutyningsih (2019), which states that the variable frequency of visits has a significant effect on the willingness to pay of improving the quality of the Baru Beach tourist attraction.

The level of significance on the visitor perception variable is 0.004 < 0.01, so it can be interpreted that the visitor perception variable has a significant effect on the willingness to pay for the improvement of facilities and the preservation of Baru Beach attractions. The coefficient value in this variable has a positive influence with a ratio odds value of 18.639. Visitors are very concerned about improving facilities and preserving tourist objects. So, visitors see many changes in the tourist attraction when visiting again. The results of this study are the same as the results of research conducted by Mohammed et al. (2013), which states that the visitor perception variable has a significant effect on willingness to pay for improving the quality of the Baru Beach tourist attraction.

Conclusion

The average value of willingness to pay (EWTP) is IDR15,000. Based on primary data from 150 respondents who have been processed, there are 75% willing to pay willingness to pay for improvements in the quality of Baru Beach attractions. In contrast, the remaining 25% are not willing to pay for improvements in the quality of Baru Beach attractions. The Age variables have a positive and significant effect on willingness to pay for improvements in the quality of Baru Beach attractions. Increasing awareness and increasing age make a person aware of permanently preserving the environment and the higher the level of concern for the environment to maintain it. The income variables in this study had a positive relationship and had a significant effect on willingness to pay for improvements in the quality of Baru Beach attractions. Thus, the manager can take advantage of determining the price of admission to a tourist attraction, which will later be used to improve facilities and preserve the tourist attraction. The education level variables in this study had a positive relationship and had a significant effect on willingness to pay for improvements in the quality of Baru Beach attractions. A higher level of education will

create more advanced thinking on environmental sustainability by knowing the impacts obtained if a person damages the environment.

The variable frequency of visits in this study had a positive relationship and significantly affected willingness to pay improvements in the quality of Baru Beach attractions. The higher the frequency of respondent visits to tourist attractions will make respondents or visitors know firsthand the level of development of the attraction. The visitor perception variables in this study had a positive relationship and had a significant effect on willingness to pay for improvements in the quality of Baru Beach attractions. It is because visitors are very concerned about the improvement of facilities and the preservation of tourist attractions so that when returning to visit, visitors see many changes that occur in the attraction. In this case, the manager can pay attention to other things that are still lacking or not maintained so that visitors do not feel bored and always want to visit the Baru Beach tourist attraction. Furthermore, to visitors, to assist managers in improving facilities and preserving the Baru Beach tourist attraction. Because sustainability, cleanliness, and others are shared responsibilities.

The variable of marital status had no significant effect and had a negative relationship to the willingness to pay improvements in the quality of Baru Beach attractions. Marriage status is not a determinant of someone to do tourist activities so that someone married or unmarried can still do tourist activities following his wishes. The distance variable had no significant effect and had a negative relationship to the willingness to pay for improvements in the quality of Baru Beach attractions. It is because how far the distance a person traveled to reach the desired tourist destination will not affect anything.

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Article Type: Research Paper

The Effect of Halal Lifestyle on Economic Growth in Indonesia

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Abstract: The halal lifestyle has become a trend for the global community and Indonesia, which incidentally has a Muslim majority population. The total expenditure spent by the Indonesians on halal products in 2017 was USD 218.8 billion. It can be stated that halal product is such a good business, especially in Indonesia. For this reason, this study aims to determine whether the halal lifestyle, Islamic banking, halal tourism, and halal food sector could increase Indonesia's economic growth. Several sources, such as books, articles, journals, and journal papers, were used for this paper. This study found that the halal lifestyle in the sharia banking, halal tourism, and halal food sector positively affected Indonesia's economic growth.

Keywords: Halal; Lifestyle; Economic Growth
JEL Classification: P49; E20

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Introduction

Halal lifestyle has become a new trend for the global community (Sukesi & Hidayat, 2019). Many countries in various parts of the world are trying to apply the halal lifestyle system in their daily life. Globally, Muslims' growing population and spending power encourage the present trend toward halal living (Adinugraha & Sartika, 2019). The global movement toward halal living has resulted in a surge in demand for goods and services equipment (Yulia, 2015). The report stated that the world's Muslims spent as much as US$2.2 trillion in 2018 on halal food, the pharmaceutical sector, and the halal lifestyle (State of the Global Islamic Economy Report, 2019). In Indonesia, halal lifestyle trends include several halal food and beverage sectors, finance, travel, clothing, entertainment and media, medications, cosmetics, and medical treatment or hospitals (Adinugraha & Sartika, 2019).

As an Arabic word, halal means lawful and permitted. Meanwhile, based on sharia law, it has two meanings. The first definition shows that halal refers to the legality of using objects or anything to fulfill physical needs, including food, drink, and medicine. The second understanding concerns the ability to use, eat, drink, and do things, all of which are determined by the texts (Sucipto, 2012). Every Muslim must consume halal goods, such as food and drink, cosmetics, pharmaceuticals, etc. In the book of Saripati Ihya Ulumiddin Imam Al-Ghazali by Shaykh Jamaluddin al-Qasimi,

it is explained that the class of halal goods is divided based on the main category only. The food may be haram because it is based on the substance or could be due to a defect in obtaining it (Republika, 2020).

Moreover, halal refers to things or actions that are compliant with sharia. In other words, the halal concept can assist Muslims in evaluating whether items and services adhere to Islamic rules and standards. The idea of halal in food and drinks is thoroughly defined, such that halal food and drink are defined as those that reflect goodness (tayyib) in all other areas, such as being healthful, clean, hygienic, and morally correct. Therefore, it heightens someone's awareness of the environment, causing them to be more ecologically conscious and concerned about all of Allah's creatures. The idea is that a person's halal knowledge might serve as a motivator to have a sense of morality in whatever he does (Adinugraha & Sartika, 2019).

In 1929, Austrian psychologists Alfred Adler and Ferdinand the Bull invented "lifestyle." Its broader meaning, as understood today, began to be used in 1961. The term "lifestyle" refers to a person's way of life as reflected in their activities, hobbies, and attitudes. The term "lifestyle" also refers to an individual's overall interaction with his surroundings (Paendong, 2016). Besides, lifestyle is a subset of secondary human requirements that may vary over time or in response to an individual's desire (Mongisidi, 2019).

Further, lifestyle is an art that is starting to be cultivated by everyone. Meanwhile, following the Indonesian Big Dictionary, it is stated that lifestyle is a pattern or behavior carried out by a group of people in daily life. When viewed from an economic perspective, lifestyle has the meaning of a person's behavior in terms of spending money and how to allocate time. The lifestyle itself has a very close relationship with technological developments and times. Individuals' interests in various things are shaped by their lifestyles, and the items they purchase reflect that lifestyle. A person's lifestyle is his or her way of life as reflected in activities, hobbies, and attitudes. In theory, a person's lifestyle is defined by his or her approach to time and money management. A person's lifestyle also affects their behavior, ultimately defining their spending pattern.

As defined by Muslim Judicial Halal Trust (MJCHT), the halal lifestyle is "a person's behavior that is consistent with Islamic beliefs and is carried out accurately, honestly, with integrity, dignity, and fairness." Regarding this, numerous individuals are anxious about the lifestyle they will lead. Similarly, a person's lifestyle will reflect his personality for Muslims, who have had every part of their lives governed by Islamic doctrines. Thus, a halal lifestyle is an obligation/must for a Muslim as an embodiment of his or her principles (Muslim Judicial Halaal Trust, 2018). Simultaneously, the concept of a halal lifestyle is gaining widespread acceptance. The term "halal lifestyle" refers to a manner of living that prioritizes and adheres to all of Islam's commandments. Halal lifestyle is also one of the halal concepts that are presently more concentrated in the culinary, medical, personal care, tourist, and lodging industries (Aziz & Ahmad, 2018).

On the other hand, halal certification is a critical criterion that Muslims must consider when purchasing food. However, a lack of awareness and information about halal and

food has serious consequences (Ekowati et al., 2020). In addition, all humankind needs the halal lifestyle, not only for Muslims, because the concept of halal is philosophically and practically an innovation from "standard operating procedures" in the last fourteen centuries ago in Islamic sharia. The halal lifestyle includes health, safety, security elements, purity, prosperity, and human dignity.

The growth of the halal lifestyle manifests the high spirit of religious rationality, which causes Muslim consumers to be more discriminating in their product purchases. Muslim cultures in the modern day are also increasingly seeking spiritual advantages from the items and services they purchase and consume that comply with Islamic teachings. The halal factor becomes the commercialization of a lifestyle, in which a product must have a halal component, and its consumers become part of a contemporary lifestyle. The halal lifestyle has been significantly developed in Indonesia, while the sectors include sharia finance, halal food, halal tourism.

Rowey et al. (2006) defined Islamic finance as a financial system based on Islamic rules and values. According to Warde (2010), Islamic finance is a set of tools that includes banks and non-bank entities, such as mutual funds, securities firms, and insurance organizations. The appearance of Islamic finance can be traced back to 1963 in Egypt, while its importance came to the global financial system only after the global financial crisis occurred in 2008 (Tabash, 2014). When offered through commodity acquisition mechanisms and with adequate competition among fund users, Islamic finance connects the cost of finance at the margin to the relative value of each commodity in use for consumption or production. As a result, financial resource allocation would be optimal. No funds would be made available for debt or risk trading (Al-Jarhi, 2017).

Next, according to Husein Bahresy (1981), halal food is a nutritious food that is permissible to consume according to Islamic tenets, such as the Qur'an and Al-hadith. Meanwhile, it is the belief that excellent food, including any meal that promotes bodily health, may stimulate hunger and is not prohibited in the Qur'an or Al-hadith. The criteria for halal food in the view of Islam are: 1) not contain pork and anything derived from pork, 2) derived from halal animals and slaughtered according to Islamic law, 3) not contain other ingredients that are forbidden or classified as unclean, such as carcasses, blood, materials derived from human organs, feces and others, and 4) all storage, sales, processing, management, and transportation equipment for halal products may not be used for pork or other non-halal goods (Supriyadi & Asih, 2021).

The third one, tourism, encompasses all aspects of travel, including commercial goods and attractions and connected enterprises. Juhaya (2014) established the history of tourist growth in Islam when it developed pilgrimage, which means to visit. Meanwhile, halal tourism was coined during the OIC summit in 2000. Halal tourism is offered to the public to meet demand in the context of a tourist journey based on a lifestyle that meets the requirements of a Muslim while traveling.

Furthermore, the total expenditure spent by the Indonesian population on shopping for halal products in 2017 was USD 218.8 billion (Fathoni, 2020). It can be a promising

business opportunity for related industries (Yulia, 2015) to supply the various needs and equipment in question (Hidayat & Siradj, 2015). The growing popularity of halal lifestyles would undoubtedly benefit national economic growth, as would the increased consumption of goods and services in these areas. In addition, the trend of the halal lifestyle in the Islamic banking financing sector is one of the instruments that can increase national economic growth (Wardani & Al Arif, 2021). Similarly, Islamic equities and mutual funds positively contribute to economic growth (Auliyatusaa'adah et al., 2021). Halal tourism thus has immense potential as a critical industry capable of sustaining the region's economy (Wijaya, 2020).

Based on the data that has been described, it can be seen that the opportunity to develop the national economy through the halal lifestyle sectors is tremendous. Moreover, Indonesia is the world's biggest Muslim country.

Table 1 Muslim Population

No.	Country	Muslim Population
1	Indonesia	231 million
2	Pakistan	212.3 million
3	India	200 million
4	Bangladesh	153.7 million
5	Nigeria	103 million
6	Egypt	90 million
7	Iran	82.5 million
8	Turki	74.43 million
9	Algeria	41.24 million
10	Sudan	39.58 million

Source: World Population Review, 2021

However, as seen in the Table 2, according to the Global Islamic Economy Indicator Score study, for the halal food sector and halal tourism or recreation, Indonesia was not even included in the top 10 list in 2019 (State of the Global Islamic Economy Report, 2019).

Table 2 Global Islamic Economy Indicator Score

Rank	Halal Food	Halal Media & Recreation
1	UAE	UAE
2	Malaysia	Malaysia
3	Brazil	Qatar
4	Australia	Lebanon
5	Sudan	Bahrain
6	Pakistan	Brunei
7	Oman	Singapore
8	Brunei	UK
9	Turki	Kuwait
10	Iran	Azerbaijan

Source: State of The Global Islamic Economy Report, 2019.

Meanwhile, economic growth is defined as the expansion of economic activities that result in a rise in the number of goods and services produced in a community and an increase in the community's prosperity (Didu, 2018). Economic growth is also a standard that can show how the community carries out activities related to the economy in generating income within a certain period. A country looks at the points of economic growth from the ability of its people to produce goods or services.

Heretofore, research on the effect of the halal lifestyle on economic growth is quite limited. Still, there are several previous studies related to this research, namely in the Islamic banking financing sector (Wardani & Al Arif (2021) and Afandi (2021)), Islamic stocks, Islamic mutual funds (Auliyatussaa'dah et al., 2021), and halal tourism (Wijaya, 2020) on economic growth. Some of these studies explained that Islamic equities and mutual funds positively influenced national economic growth, and halal tourism could increase regional economic growth. However, there has been limited research on how it affects economic growth and halal tourism on a national scale in the halal food sector.

In addition, studies on the current halal lifestyle have not been explored in-depth, especially studies on economic growth. From this background, the authors are interested in exploring further the influence of a halal lifestyle on the Islamic banking sector, halal food, and halal tourism on national economic growth.

Research Method

The approach used in this research was qualitative. This type of research includes library research, namely research that in its implementation collects information or data from various books, articles, journals, and reports that are relevant to the research (Muhyiddin et al., 2017). This type of research relies on literacy and understanding of the literature relevant to the studied topic. In this study, the limitations of the review were that, first, the articles or journals used were those published in 2015-2021; it is to keep information and data up to date. Second, the material used as literature was obtained from studies in journals that used Indonesian and English. Data were obtained from the Google search engine, Google Scholar, emerald.com, and other authoritative websites by typing keywords related to this research topic. Some of the papers and articles used as references are:

Related to halal lifestyle we have Aziz and Ahmad (2018) with “The Halal Lifestyle of Muslim Working Women”, then we have Adinugraha & Sartika (2019) with “Halal Lifestyle di Indonesia”, and the last is Ekowati et al. (2020) with “Increasing Community Empowerment Through Halal Lifestyle and the Critical Point of Halal Food in the Young Generation”.

Related to economic growth we have Auliyatusaa'adah et al. (2021) with “Pengaruh Saham dan Reksadana Syariah Terhadap Pertumbuhan Ekonomi Indonesia Tahun 2013-2019”, the next article is El Ayyubi et al. (2018) with “Pengaruh Bank Syariah Terhadap Pertumbuhan Ekonomi di Indonesia”, after that we have Didu (2018) with “Pengaruh

Utang Luar Negeri dan Penanaman Modal Asing Terhadap Pertumbuhan Ekonomi di Indonesia", the fourth is Komalasari et al. (2020) with How does Halal food on Your Plate Punch Indonesia's Economy", and lastly we have Wardani and Al Arif (2021) with "The Effect of Sharia Bank Financing, Zakat, and Education Expense on Economic Growth and Human Development Index in Indonesia 2015-2019".

While in islamic finance we have two article. The frist one is by Al-Jarhi (2017) with "An Economic Theory of Islamic Finance" and Munir et al. (2021) with "Does Islamic Microfinance Indeed Based on Sharia-compliant? The Shreds of Evidence Report in Ogan Komering Ilir Regency, South Sumatera, Indonesia".

Result and Discussion

Halal lifestyle has become a daily routine because of its inclusive nature, both for Muslims and non-Muslims. In the future, the world's population is increasingly looking for halal products; it is crucial and provides an opportunity for Indonesia to become a consumer of halal products and a producer who should be taken into account, which will later affect the national economy. The Ministry of National Development Planning/National Development Planning Agency said that the main focus of implementing sharia economic development is on the Islamic finance sector, halal food and beverage, halal tourism, modest fashion, and other sectors that have the potential to increase economic growth (Bappenas, 2018).

Meanwhile, according to Sukirno (2016), economic growth can be used as a measure that can show how a country's economy develops over time. Economic development is usually marked by economic growth with GDP (Gross Domestic Product) as an indicator (Auliyatussaa'dah et al., 2021). In addition to GDP, other indicators can be seen from the increase in real per capita income, guarantees for the population's welfare, and the reduced unemployment rate.

Several research results showed that the halal lifestyle in several sectors could be an instrument to increase economic growth. The research of Wardani and Al Arif (2021) used a quantitative technique to investigate the direct and indirect impacts of Islamic bank financing, zakat, and educational spending on economic development and the Human Development Index (IPM). The research was based on a route analysis using panel data covering 2015–2019. The studies revealed that Islamic banking, zakat, and education spending positively affected economic growth (Wardani & Al Arif, 2021).

The research conducted by El Ayyubi et al. (2018) aimed to analyze the causal relationship between Islamic banking on Indonesia's economic growth, investigate the response of Indonesia's economic growth when shocks occur in Islamic banking variables, and determine the contribution of Islamic banking variables to Indonesia's economic growth. The study employed the vector error correction model (VECM) method to see the long-term effect and response to shocks in the variables studied, using data from January 2010 to December 2016. The results obtained were the existence of bidirectional causality

between Islamic financing and GDP. The VECM estimation results significantly influenced Islamic banking and economic growth. In the results of the IRF, the response to economic growth experienced a different response to the shocks of sharia financing and third-party funds (DPK). Based on the FEVD results, it can be seen that financing in Islamic banking had the most significant contribution in influencing economic growth, but not in TPF. Therefore, Islamic banking must be more efficient in distributing TPF in financing (El Ayyubi et al., 2018).

In line with Rahmi's (2020) research, it is demonstrated that halal tourism had positive results and responses from domestic and foreign tourists, as evidenced by data on rising GDP and the top ten halal tourism destinations in OIC member countries and the number of foreign tourists visiting Indonesia to enjoy halal tourism. Indonesia's cultural riches also provide an excellent opportunity to promote the halal tourist business, positively affecting Indonesia's economic growth (Rahmi, 2020).

Research conducted by Komalasari et al. (2020) analyzed the economic contribution of the halal food business to Indonesia. Their study utilized a method known as input-output analysis, with data from the Central Statistics Agency in 2010 by excluding the non-halal sector, namely alcoholic beverages. Their research findings indicated that the halal food business benefited the Indonesian economy and boosted total economic production by IDR 1.5 trillion (Komalasari et al., 2020).

Moreover, the growing popularity of halal lifestyles affected the industry's contribution to the national economy. As evidenced by the halal sector's growing market share to GDP, it was from 24.3% in 2016 to 24.86% in 2020 (Ministry of Finance Republic of Indonesia, 2021).

Conclusion

The growth of the halal lifestyle manifests the high spirit of religious rationality, causing Muslim consumers to be more discriminating in their product purchases. Muslim cultures in the modern day are also increasingly seeking spiritual advantages from the items and services they purchase and consume that comply with Islamic teachings. The halal factor then becomes the commercialization of a lifestyle, in which a product must have a halal component, and its consumers become part of a contemporary lifestyle. The sectors include Islamic finance, halal food, and halal tourism. In Indonesia, the growing halal lifestyle has resulted in an increasing need and demand for halal goods and services. It is undoubtedly a promising opportunity for related industry players. Based on the various theories and research that the authors referred to, it can be concluded that the halal lifestyle in the sharia banking sector, halal food, and halal tourism could increase Indonesia's economic growth.

The suggestions for further research related to the influence of the halal lifestyle on Indonesia's economic growth are that, first, this study used a qualitative approach. Thus, further research can use a quantitative approach to develop mathematical models,

theories, and hypotheses related to the phenomenon of halal lifestyle on economic growth. It is because the measurement process is a central part that provides a fundamental relationship between empirical observations and mathematical expressions. Secondly, further researchers can conduct studies on other sectors of the halal lifestyle, such as halal clothing, halal cosmetics, and medicines, and their effect on economic growth.

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Article Type: Research Paper

Efforts to Increase the Role of Halal Tourism: West Nusa Tenggara Islamic Center

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Abstract: Recently, religious tourism has attracted the attention of various parties because of the high interest of Muslim tourists. West Nusa Tenggara (NTB) is one of the provinces that carry religious or halal tourism. It was proven by attaining the halal tourism destination award by the West Nusa Tenggara Islamic Center in 2015. However, the West Nusa Tenggara Islamic Center still lacks development and literacy, especially tourism. Therefore, the motivation of this research is to find alternative strategies that might be used for the development process and increase literacy. By interviewing four respondents, the authors uncovered alternative strategies using SWOT analysis. The five strategies might be beneficial: collaborating with stakeholders, creating new attractions, marketing destinations, improving service quality, and strengthening the destination concept.
Keywords: Islamic Center; West Nusa Tenggara; Halal Tourism; Strategy; SWOT
JEL Classification: Z33, L83, Z32

Introduction

A strategic and quantifiable plan is required to ensure that tourism development and growth align with the goals set forth to carry out tourist development. Therefore, it achieves the anticipated aims and objectives of economic, social, cultural, and environmental factors. Fundamentally, tourism relies on the uniqueness and authenticity of nature and culture in a regional community. Because nature is the foundation of tourism development, particularly in Indonesia, tourism and development must prioritize balance, including the relationship between humans and God, humans and humans, and humans and the surrounding environment in the form of natural and geographical resources.

Moreover, Indonesia has various tourism potentials ranging from nature, culinary, marine, and others to tourism development. Currently, religious tourism is being developed, one type of tourism product closely related to religion embraced by humans. Religious tourism is defined as a tourist activity to a place that has special meaning for religious people, usually in the form of places of worship, tombs, or ancient sites that have advantages. These advantages are, for example, seen from the side of history, the existence of myths and legends about the place, or one type of product uniqueness and architectural excellence of the building (Kasih, 2019).

Specifically, West Nusa Tenggara (NTB) has a majority Muslim population. Based on BPS data in 2021, the total Muslim population in NTB reached 96.78% of the total 4,785,980 inhabitants. In addition, NTB is also known as an area with the potential for religious tourism (halal tourism). One of the icons that have become a halal tourism object is the West Nusa Tenggara Islamic Center, also known as the Hubbul Wathan Mosque.

Unfortunately, the development of literature on the NTB Islamic Center has not been widely carried out. Some of the research conducted at the Islamic Center was only limited to religious aspects (Walidaen et al., 2017). However, this study is different from the previous one. In this study, the authors focus on tourism at the NTB Islamic Center. Therefore, the authors want to find and provide strategic options in increasing the role of the Islamic Center of NTB.

Halal tourism is a relatively new product in the tourism industry directed towards Muslim tourists who adhere to Islamic rules (Ferdiansyah et al., 2020). According to Battour and Ismail (2016), halal tourism is a tourist attraction or tourist activity allowed in Islamic teachings to be used by Muslims concerning the tourism industry. In addition, Chookaew et al. (2015) said that the concept of halal tourism is the actualization of the Islamic concept, namely the value of halal and haram being the primary benchmark. It means that all aspects of tourism activities cannot be separated from halal certification, which must be a reference for every tourism actor.

Halal tourism is also a brand for a destination. According to Kotler and Keller (2016), brand image is a set of beliefs, ideas, and impressions that a person has of a product. Therefore, consumer attitudes and actions towards a brand are determined mainly by the brand image. Brand image is also a seller's promise to consistently provide certain features, benefits, and services to buyers, not just a symbol that distinguishes a particular company's product from its competitors. Also, Suryani (2008) argues that brand image is a set of associations about a brand stored in consumers' minds or memories. Meanwhile, Ashton (2014) mentioned that brand image is what consumers think or feel when they hear or see the name of a brand or, in essence, what consumers have learned about brand image. It can be concluded that a brand image could affect the tourist decision process.

On the other hand, decision-making can be considered an activity of consumers choosing a product or service in making purchasing decisions (Anggraini & Dewanti, 2020; Kotler & Keller, 2016). This decision-making process is essential for tourism development related to various facts that influence the decision to visit a tourist destination. In addition, Nugroho and Burhani (2019) stated that consumer decision-making is an integrated process used to combine knowledge to evaluate two or more alternative behaviors and choose one of them. Razalli (2018) also mentioned that purchasing decisions are consumer behavior after obtaining information about the desired product and the process of assessment and decision making by determining one option considered the most profitable.

Research Method

The purpose of this study is to find an alternative strategy in developing the role of the Islamic Center as a tourist object in West Nusa Tenggara (NTB). The research method used was qualitative with in-depth interviews, applied in this study using a non-probability sampling design to identify key informants. Snowball sampling was chosen as the data collection method for the first stage. Because the authors used the information saturation method, there was no single key informant as the exact number of sample sizes in the qualitative method. Hence, when the researchers reached a certain level of information, they would end the in-depth interview (Hartarto et al., 2021)

The authors involved four respondents willing to be interviewed directly: the NTB Islamic Center Mosque chairman and the local visitors. The respondents were provided with information about the process and results to conduct this interview. Respondents could stop the interview if they did not want to answer any questions. The obtained interview data were then transcribed, reduced, categorized, and presented in a SWOT analysis (Williamson et al., 2018)

In this case, SWOT analysis referred to internal and external assessment and evaluation. From an internal perspective, the authors interviewed the head of the management of the NTB Islamic Center Mosque regarding strengths (S) and weaknesses (W). Meanwhile, the authors considered the opportunities (O), threats (T), and other factors affecting the topics we raised externally. It helped the authors formulate appropriate strategies, plans, and preventive actions based on the analysis results.

Generally, the SWOT matrix is used to develop a tourism object development strategy. This SWOT matrix can clearly describe how the opportunities and threats are faced with being adjusted to the strengths and weaknesses of tourism. Through the SWOT matrix, the proper development strategy can be determined. This matrix can also generate possible alternative strategies. For more details, it can be seen in Table 1.

Table 1 SWOT Matrix

	Strengths	Weaknesses
Opportunities	Strengths and Opportunities Strategy (SO)	Weaknesses and Opportunities Strategy (WO)
Threats	Strengths and Threats Strategy (ST)	Weaknesses and Threats Strategy (WT)

Based on the Table 1, it can be explained that SO takes advantage of all strengths by taking into account opportunities, WO takes advantage of weaknesses by paying attention to opportunities, ST takes advantage of strengths by paying attention to threats, and WT minimizes weaknesses to face threats.

Result and Discussion

From interviews conducted with the four respondents, the authors can conclude several points regarding internal and external factors from the SWOT analysis at the Islamic Center of West Nusa Tenggara (NTB). The following are the interview results that the authors conducted:

Table 2 SWOT

Strengths	Weaknesses	Opportunities	Threats
The regular festivals related to halal tourism	Budgets constraint	Potential halal tourism center in Lombok	Natural disasters
Unique mosque architecture	Non-permanent tour guide	Cooperation with various parties	The emergence of halal tourism competitors in the surrounding area
Islamic center has a literacy center.	There is nothing to buy.	Regulation of the governor of West Nusa Tenggara on the sale of local products in the Islamic Center area	
Becoming a priority and role model of halal tourism in the city center	Lack of precise market segmentation	Plans to become a center for converts to Islam	
Having an online and offline promotional media	Low maintenance	Plans to create a digital museum	
The availability of English and Arabic speaking tour guide	There are no attractive choices of attractions yet.	Plan to become an eco-friendly tourism destination	
There are special tour packages for non-Muslim tourists.	Less service from the workers	Vast numbers of international tourists	
Halal certified			

After dividing the interview results into several elements, the next step was to analyze the right strategy according to the interview results using SWOT Matrix.

Table 3 SWOT Matrix

	Strengths	Weaknesses
Opportunities	**Strengths and Opportunities Strategy (SO)** 1. Cooperating with other stakeholders in holding a halal festival 2. Creating a digital library that attracts young tourists 3. Using a tour guide who understands religion to introduce Islam more deeply to non-Muslim tourists 4. The unique architecture of the mosque can be harmonized with the concept of eco-friendly tourism. 5. Increasing the promotion to foreign tourists.	**Weaknesses and Opportunities Strategy (WO)** 1. Choosing the right target market for promotion 2. Collaborating with local government to create outlets for local specialty products 3. Collaborating with tourism activists to add exciting tourist attractions 4. Cooperating with other parties to improve service quality
Threats	**Strengths and Threats Strategy (ST)** 1. Making the Islamic Center the center of religious activities in West Nusa Tenggara.	**Weaknesses and Threats Strategy (WT)** 1. Conducting periodic inspections of buildings as a precautionary measure for disasters 2. Creating a differentiated attraction with rival destinations

From the interview made, Table 3 depicts the alternative strategies to increase the role of West Nusa Tenggara Islamic Center as a halal tourism object. Therefore, the authors can conclude it into several alternative strategies:

Cooperating with other stakeholders

According to Sumarto (2009), stakeholders are individuals, groups, or organizations interested in development activities or programs. Tourism development involves three stakeholders: the government, the private sector, and the community (Soffan & Holis, 2020). Each stakeholder has a different role and function that must be understood to realize and appropriately implement tourism development in an area.

The government's role in tourism development is to make systematic policies and planning. For example, the government provides and builds infrastructure to support tourism activities, improve human resources who work as workers in the tourism sector, and others. The private sector as a business actor has a role in providing tourism supporting facilities. In addition, tourism requires many supporting facilities, such as

restaurants, accommodation, travel agencies, transportation, and others (Amalyah et al., 2016). At the same time, the manager can be part of a tourist attraction to attract tourists by introducing the object they have.

Creating a new halal attraction

According to Suwena and Widyatmaja (2017), attractions or tourist attraction objects are significant in attracting tourist arrivals. Things that can be developed into tourist attractions are tourism capital or resources. Capital attractions that attract tourist arrivals are divided into three: natural resources, such as mountains, lakes, beaches, and hills; cultural tourism attractions, such as the architecture of traditional houses in the village, archaeological sites, arts and crafts, rituals, festivals, people's daily life, hospitality, and food; artificial attractions, such as sporting events, shopping, exhibitions, conferences, and others.

When it comes to the NTB Islamic Center, the management must add attractions that consider the concept of halal tourism, such as the Islamic history museum in West Nusa Tenggara, shops selling halal souvenirs, and digital libraries.

Marketing

Market segmentation is the most researched aspect of target marketing research in tourism. Like any other market, tourists do not respond uniformly to marketing operations; hence, segmentation identifies diverse groups of tourists. Tourism's various services and clients make segmentation essential for adapting to changes and competing pressures.

According to a recent assessment of literature on tourist segmentation studies (Dolnicar et al., 2013), psychographic variables are the most commonly utilized segmentation criteria (75 percent), followed by behavioral (21 percent), and a combination of both (21 percent and 4 percent). Demographic, socioeconomic, and lifestyle factors are also the most commonly utilized foundation for segmenting tourists. Moreover, demographic characteristics, activities, travel expenditure, benefits, and motivation are the variables recommended for tourist segmentation (Frochot, 2005; Frochot & Morrison, 2000; Mok & Iverson, 2000; Sellick, 2004; Sung et al., 2000).

In the case of West Nusa Tenggara (NTB) Islamic Center, the management should reanalyze the halal tourist segmentation. Besides, the Indonesian government is still attracting more tourists from the Middle East with the halal tourism industry. However, the study of Battour and Ismail (2016) discovered that tourists from non-Muslim nations have a reasonably favorable attitude toward halal tourism. Most of their responders have visited Muslim nations to learn about and experience Muslim culture. They also benefit from the safer environment provided by Muslim countries. Therefore, it can be concluded that the Islamic Center of NTB must expand its segmentation to promote the concept of halal tourism owned, both from Muslim and non-Muslim countries.

Improving the service quality

According to Coelho et al. (2021), the perception of service quality is the gap between expectations and perceptions. They added that product quality is more straightforward to judge than service quality. Therefore, with the characteristics of intangibility, heterogeneity, perishability, and simultaneity (production and consumption), service quality must be measured through other external factors. According to a prior study, service quality is defined as a consumer's subjective assessment of a service supplied by a service provider (producer) based on the disparity between their expectations and realistic perceptions of the service. In addition, Coelho et al. (2021) offered ten service quality dimensions, including tangibility, reliability, responsiveness, competence, access, courtesy, communication, credibility, security, and comprehension.

Based on the observation in this study, the quality of the service at NTB Islamic Center was not in hospitality standards. It could be seen from the cleanliness of the toilet and the availability of workers on duty. Therefore, the Islamic Center needs to cooperate with other parties, such as the government, academics, and private parties, to improve the knowledge and skill of tourism services.

Destination concepts

The conceptual destination is divided into two categories. First, attractiveness represents tourists' thoughts and sentiments regarding the destination's perceived potential to meet their needs. The more a destination can suit the needs of tourists, the more appealing it appears to be and the more likely it is to be picked (Mayo & Jarvis, 1981). As a result, the features of a location are critical in assisting tourists in evaluating the destination's attractiveness and making appropriate decisions. People are also more likely to visit and spend time at a tourist destination if appealing. Consequently, the most crucial aspect of a destination's attractiveness is its impression on tourists. Tourism would not exist without attraction, and there would be little or no demand for visitor facilities and services. Facilities and services will only follow when people are interested in a destination (Ferrario, 1979).

Second, if a destination's market share is significant enough for tourists and financial rewards, it is said to be competitive (Hassan, 2000). Hasan (2000) asserted that a destination's competitiveness is tied to providing a more pleasant experience than other locations. According to Pearce (1997), destination competitiveness is a technique and approach for analyzing and comparing distinct destination features in a planning context. In addition, the primary destination components can be evaluated to understand the destination's competitiveness better. Tourism destination competitiveness has also been examined from an environmental standpoint (Mihalič, 2000).

In West Nusa Tenggara (NTB) Islamic Center, the respondent mentioned the concept to be applied. Tourism development at the Islamic Center will carry the concept of halal tourism based on eco-friendly tourism. What is meant by an environmentally friendly

concept is the development of destinations that pay attention to the environment, such as planting more trees and recycling waste.

Conclusion

In recent decades, religious tourism has received more attention from tourists and researchers. Religious tourism is defined as a tourist activity to a place that has special meaning for religious people, usually in the form of places of worship, tombs, or ancient sites that have advantages. When it comes to religious tourism, West Nusa Tenggara (NTB) is one of the intriguing examples. NTB province won the halal tourism award in 2015; one of the destinations that won was the icon of halal tourism in NTB is the NTB Islamic Center.

However, NTB Islamic Center still lacks development studies, especially in tourism. Therefore, the authors recommend the alternative strategies that are possibly used for its development process. The authors interviewed four respondents to find alternative strategies using SWOT analysis and found that NTB Islamic Center has five possible strategies: cooperating with stakeholders, making new attractions, marketing, improving service quality, and strengthening the destination concept.

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Analysis of Causality Interactions Between Education, Inequality, and Unemployment Toward Poverty in East Java: Empirical Evidence from Dynamic Panel Co-integration Model

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Abstract: The issue of poverty has been faced for a long time. In Indonesia today, East Java is the most significant contributor to the poor people. With various policies that the government has implemented, the issue of poverty remains unsolved. This study, therefore, discusses the causality relationship between education, inequality, and unemployment toward poverty in East Java. Using secondary data from the Statistics Indonesia (BPS), we estimated dynamic panel data of cities and regencies in East Java from 2012 to 2017. Employing the Granger causality approach, it was found that education has a one-way relationship with inequality and a two-way relationship with unemployment. In addition, poverty has a one-way relationship with all the variables used. In the long term, education has a negative correlation with poverty. According to our findings, both the government and the private sector need to expand more job opportunities and improve education for the poor as both sectors significantly reduce poverty in the long term.

Keywords: Education; Inequality; Unemployment; Poverty; Granger Causality
JEL Classification: D63, E24, I24, I32

Introduction

In the present day, poverty is one of the biggest problems confronting many countries throughout the world, including Indonesia. Poverty has the same effect on all countries, such as welfare for low-income families (clothing, food, housing), low level of education, and limited access to health facilities (Dewi & Rachmawatie, 2020). In 2016, 6.80% of the total Indonesian population, or around 17,951,413 people, lived on an income of less than US$2 per day (Statistics Indonesia, 2018). Specifically, one of the most significant contributors to poverty in Indonesia is East Java Province.

At the end of March 2019, more than 4 million people in East Java lived below the poverty line. With this number, East Java Province is said to be the province with the most significant number of poor people in Indonesia.

However, this figure has been much lower since 2013 and continues to decline from year to year. In 2013, the number of poor people in East Java reached 4,893,000 people.

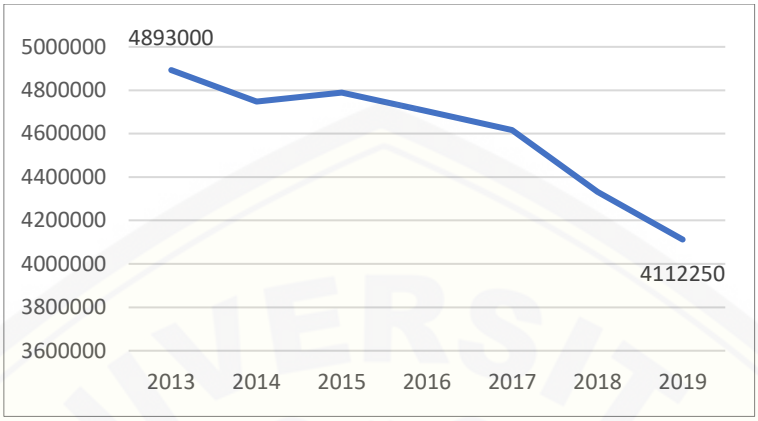

Figure 1 Total of Poor People in East Java Province
Source: Statistics Indonesia (2019a)

Although the level of decline has a relatively large number throughout the year, the ratio between the population and the number of poor people across the years reveals that the change percentage is relatively minor. Therefore, the poverty reduction rate in East Java tends to be very small. In 2013, the proportion of poor people was 12.73%, and after six years in 2019, the percentage only decreased by 2.36%.

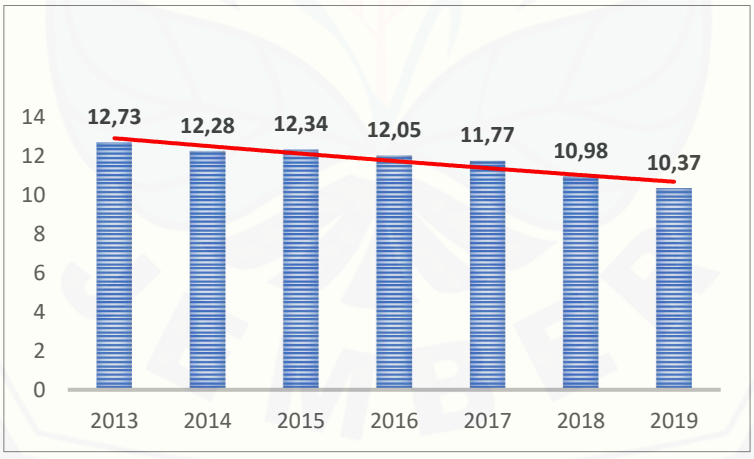

Figure 2 Poverty Percentage in East Java Province
Source: Statistics Indonesia (2019b)

Moreover, poverty is the primary constraint in economic development; those who live in a cycle of poverty have a tiny probability of getting economic opportunities. The weak capability of the poor puts them at a disadvantage position compared to those who are not poor. The poor also have many obstacles in accessing essential life services, such as schools and health facilities (Suryahadi et al., 2011). Indeed, the difficulty of accessing

economic opportunities is one of the reasons that can increase the level of poverty experienced by individuals and households (Ogbeide & Agu, 2015). Most economists consider that solving the problem of poverty requires appropriate policies; besides that, the poor in the population must be able to get the benefits from the implemented policies.

Government efforts to tackle and reduce poverty, thus, continue to be implemented. Anti-poverty programs launched by the government, such as direct cash transfer, credit business for society, and some other programs, have a massive impact on poverty alleviation. However, when the alleviation program was implemented, many poor people were left behind because of administrative problems or the inaccurate object of the targeted programs. As poverty conditions are increasingly complex, poverty alleviation will become more challenging.

Nowadays, poverty has become a multidimensional problem. With the unresolved poverty problem, it is estimated that there are problems in the formulation and implementation of improper policy in poverty alleviation. Most poverty cases are more linked and measured by the economic dimension, where the lack of money is the leading cause of poverty. In another perspective, poverty is limited to fulfilling material and daily needs. However, poverty always has various dimensions: health, social, education, and politics. In this regard, education is an essential element in alleviating poverty. Education has emerged as an almost undeniable strategy for economic development in overcoming social, political, and economic problems in developing countries (Datzberger, 2018). However, in Indonesia, there is a polemic where education has not effectively alleviated poverty. Both come from the supply side, where the quantity of infrastructure and the quality of teachers is inadequate; there are also problems on the demand side, where financial capacity is a significant problem for poor households accessing education (Suryahadi et al., 2011). In some cases, one of the reasons parents do not enroll their children in school is because the opportunity cost of enrolling their children in school is higher than sending them as child workers and earning money to ease the burden on the poor at home.

Poverty and education are two things that have been widely discussed in research in recent years. This thinking begins with the belief that high education and human resources are essential for economic growth. Most of the literature on poverty and education concludes that the two are inversely related—the higher the education level, the lower the poverty rate, vice versa. The relationship between poverty and education can also be seen as two perspectives. First, investment in education increases the skills and productivity of poor households, increasing income levels and improving living standards in the long term. Second, although education positively influences poverty alleviation, a complicated problem is identified; poverty itself is a significant obstacle to educational attainment for the poor (Awan et al., 2011). In addition, poverty has a considerable effect on education, divided into three dimensions. First are resources, especially from the financial side. Second, mental pressure, especially social pressure, mutilates the mindsets of non-poor students at their schools, causing poor students to be

reluctant to go to school. Third, distortions in institutions affect the quality and standards of teaching (Bramley & Karley, 2007).

On the other hand, some literature states that poverty and inequality are likened to two sides of one coin. Poverty and inequality are also often found simultaneously in a region with acute poverty. The assumption often mentioned, either explicitly or implicitly, argues that where there is an increase in poverty, it is assumed that inequality will also increase, and vice versa (Beteille, 2003). In addition, poverty and inequality have an indirect relationship with economic growth. According to Adams (2004), a gradual increase in economic growth will reduce poverty, but the increase will have a different response to inequality; the changes in inequality are tiny compared to the decrease in poverty. Within a specific area, poverty levels are also often linked to inequality, as previous research has shown. Inequality is said to be vital in its contribution to reducing or increasing poverty in an area (Adams, 2004; Bourguignon, 2003). Aigbokhan (2000) asserted that the polarization of inequality contributes to increased poverty. Inequality is indirectly related to the unequal distribution of labor so that the income received by the community tends to be different.

Furthermore, increasing unemployment is often considered another indicator of a country's economic decline. It will create a multiplier effect; there will be widespread poverty when a country's economy goes down. In recent years, the relationship between poverty and unemployment has not been clear. However, unemployment usually lowers a person's standard of living due to the absence of income received, causing a person to become poor (Mohammad & David, 2019). Besides, although many poverty alleviation and unemployment reduction policies are often carried out in developing countries on a large scale, both issues are still tricky problems to solve (Agénor, 2004).

While many studies have discussed the factors that may influence poverty in society, the question of possible causal relationships between phenomena or variables that correlate with poverty has not been given much attention, especially implementation in the case of poverty in East Java Province. The importance of understanding the causal relationship to the phenomenon of poverty can assist policymakers in developing and formulating more appropriate policies for the ongoing poverty problem. Hence, the policymaking can lead to the main problem that caused the phenomenon to begin.

To bridge the gap, we analyzed the causal relationships between education, inequality, unemployment, and poverty in East Java Province. The rest of this paper is organized as follows: Section 2 describes the methodology used in this study. Section 3 shows the results and discussion. In the end, it closes with the conclusions and recommendations of this study.

Research Method

This quantitative study aims to analyze the causal relationship between education, inequality, and unemployment on poverty in East Java Province. The research began with

data searching, data input, and data processing following the research model used; the analysis results ended with conclusions and suggestions for policymakers. The data used in this study were secondary in the form of panel data obtained from the Statistics Indonesia (BPS). The data used were annual data at the regency and city levels from 2012 to 2017.

The Granger causality panel model was employed to analyze the causal relationship between education, inequality, and unemployment on poverty in East Java Province. In this case, Granger has a strong advantage in analyzing and forecasting two variables that may have correlated. Since it formulates a test statistic to test whether movements in one variable systematically precede movements in another variable (Hacker & Hatemi, 2006), the Granger causality analysis used in this study was based on the following regression equation:

$$[Educ]_{i,t} = \alpha + \sum_{k=0}^{p} \gamma^{(k)} [Educ]_{i,t-k} + \sum_{k=0}^{p} \beta_i^{(k)} \begin{bmatrix} Pov \\ Ineq \\ Unemp \end{bmatrix}_{i,t-k} + \vartheta_{i,t} \quad (1)$$

Educ is education measured using school expectations. Pov is poverty gauged based on the percentage of poverty occurring in regencies and cities in East Java Province. Ineq is inequality determined using a score from the GINI index. Meanwhile, Unemp is the open unemployment rate. In addition, Equation 1 shows a regression model to see the causal relationships between education and poverty, inequality and unemployment, respectively.

$$[Ineq]_{i,t} = \alpha + \sum_{k=0}^{p} \gamma^{(k)} [Ineq]_{i,t-k} + \sum_{k=0}^{p} \beta_i^{(k)} \begin{bmatrix} Pov \\ Educ \\ Unemp \end{bmatrix}_{i,t-k} + \vartheta_{i,t} \quad (2)$$

Equation 2 depicts a model to sequentially test the causal relationships between inequality and poverty, education and unemployment, respectively.

$$[Unemp]_{i,t} = \alpha + \sum_{k=0}^{p} \gamma^{(k)} [Unemp]_{i,t-k} + \sum_{k=0}^{p} \beta_i^{(k)} \begin{bmatrix} Pov \\ Educ \\ Ineq \end{bmatrix}_{i,t-k} + \vartheta_{i,t} \quad (3)$$

Equation 3 illustrates a test model to sequentially see the causal relationships between unemployment and poverty, education and inequality, respectively.

$$[Pov]_{i,t} = \alpha + \sum_{k=0}^{p} \gamma^{(k)} [Pov]_{i,t-k} + \sum_{k=0}^{p} \beta_i^{(k)} \begin{bmatrix} Unemp \\ Educ \\ Ineq \end{bmatrix}_{i,t-k} + \vartheta_{i,t} \quad (4)$$

In the last model test, Equation 4 displays the model to examine the causal relationships between poverty and unemployment, education and inequality, respectively. In this research, the strategy was divided into four main stages. First, the stationarity test used a unit root test on the panel series. Second, a cointegration test was performed to see a

long-term relationship between variables. Third, if it was found that the variable was cointegrated, it was necessary to estimate the long-term relationship using the fully modified ordinary least square (FMOLS) method. Since OLS requires that each variable used is exogenous, we needed to test the variables using FMOLS in panel cointegration estimates; using simple OLS in long-term estimation relationships may cause bias in the estimates. In the last stage, the Granger causality panel test was then carried out.

Result and Discussion

East Java is a province with various characteristics of cities and regencies. The characteristics of education, inequality, the total percentage of poverty, and the unemployment rate are different in each region. Table 1 shows the average of the various variables used in this study for 2012 to 2017. The average in each regency and city in East Java Province indicates that 12.20% were classified as poor. The average education taken by people in East Java was 12.59 years, meaning that people in East Java could complete their education up to the high school level. In addition, in East Java, about 4.2% of the total available workforce was still unemployed.

Table 1 Descriptive statistic

Variables	Mean	St. Dev
Poverty percentage	12.20529	5.018401
School expectations	12.59789	0.969096
Inequality rate	0.327763	0.042487
Unemployment rate	4.232158	1.595788

Stationarity Test

A stationarity test was carried out using the unit test root panel. To investigate stationarity in the series, we used a unit root test on the data panel using the methods of Levin, Lin, and Chu, Augmented Dickey-Fuller–Fisher Chi-Square, and Phillips-Perron–Fisher Chi-Square. The results of the estimated stationarity test are presented in Table 2.

Table 2 The Results of Unit Root Panel Test

Null: No Unit Root				
Method		**Levin Lin and Chu**	**ADF-Fisher Chi-Square**	**PP- Fisher Chi-square**
	Variables			
Level	Poverty percentage	-9.00268*** (0.0000)	100.155** (0.0332)	169.517*** (0.0000)
	School expectations	-66.9514*** (0.0000)	170.298*** (0.0000)	242.882*** (0.0000)
	Inequality rate	-11.4810*** (0.0000)	104.949** (0.0156)	140.241*** (0.0000)
	Unemployment rate	-27.6698*** (0.0000)	177.344*** (0.0000)	181.682*** (0.0000)

* indicates significant at *10%, **5%, ***1% level respectively.

Table 2 displays that the results found that all variables were stationary at the level, even most of them were statistically significant at the 1% level. However, it was different in the variables of inequality and poverty; in the ADF-Fisher method, the two variables were statistically significant at the 5% level. At this point, the unit root panel test revealed that data were stationer. Since data were stationer, we could proceed to the cointegration panel test to analyze the existence of a long-term relationship between poverty, education, inequality, and unemployment.

Cointegration Panel Test

The cointegration test requires that all variables are integrated in the same order. The unit root test in the previous section showed poverty, education, inequality, and stationary unemployment at the order level so that the researcher could proceed to the cointegration test. Using the Kao residual cointegration test (Engle-Granger Based) approach, we tested cointegration.

Table 3 Cointegration Panel Test Results

Null: No Cointegration		
	t-statistic	**Prob**
ADF	-7.231066	0.0000
Residual variance	0.105109	
HAC variance	0.112355	

Table 3 presents that the t-statistic value of the ADF outcome was -7.231066 with a probability of 0.0000. As the probability value was <5%, we could reject the null hypothesis (Ho). Thus, it can be said that the variables of poverty, education, inequality, and unemployment used in this study had a long-term relationship or were cointegrated.

FMOLS Estimation

After confirming the cointegration relationship between variables, we should follow the long-term analysis estimation. We estimated the long-term effects of education, inequality, and unemployment on poverty. The estimation results of the panel FMOLS method are shown in Table 4 concerning the effect of the long-term relationship of education, inequality, and unemployment on poverty. All variables were statistically significant at 1% significance, where education significantly affected poverty reduction. When public education increases by one year, it will reduce poverty by 0.7%. Also, inequality had a positive effect on poverty, meaning that when the level of inequality rises 1%, it will increase the level of poverty by 0.29%. The same thing was found in the unemployment rate; when the unemployment rate rises by 1%, it will increase the percentage of poverty by 0.02%.

Table 4 FMOLS Test

Poverty	FMOLS Estimation
Education	-0.703348*** (0.0000)
Inequality	0.218789*** (0.0000)
Unemployment	0.022707*** (0.0000)

* indicates significant at *10%, **5%, ***1% level respectively.

These findings align with Awan et al. (2011), where education affects poverty by increasing productivity and slowly lifting people out of poverty. In addition, the findings on the effect of inequality and poverty are in line with Beteille (2003) that reducing inequality in the long term will reduce the level of poverty. Meanwhile, the effect of unemployment on poverty is consistent with Mohammad and David (2019) that unemployment will cause individuals not to earn income; moreover, this case will make the individual poorer.

Granger Causality Panel Test

The FMOLS cointegration test carried out implies the effect of a one-way relationship of education, inequality, and unemployment towards poverty. The test also found a long-term relationship between the four variables. We tested to see possible causal relationships between variables for the next stage. Before estimating Granger causality, we needed a lag matching the estimate criteria. The researchers then determined the VAR lag-order selection criteria test to find the lag.

Table 5 VAR Lag Order Selection Criteria results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-129.3983	NA	0.013161	7.020963	7.193341	7.082294
1	32.11360	280.5207*	6.25e-06*	-0.637558*	0.224329*	-0.330905*
2	47.75026	23.86647	6.57e-06	-0.618435	0.932963	-0.066459
3	59.06420	14.88676	9.09e-06	-0.371800	1.869108	0.425498

*lag order selected based on criteria

According to the results in Table 5, the lag used in our estimation of Granger causality was one year. It means the variables themselves influenced the variables used in this study in the previous year. Furthermore, we continued with the Granger causality test after the lag was confirmed. The results of the Granger causality test are displayed in Table 6.

Table 6 depicts that the relationship between poverty and education was one direction: poverty causes education to increase or decrease. It is in line with Awan et al. (2011) that poverty is a severe obstacle for someone to access education. The same thing may also happen in East Java Province: poverty limits education to be achieved. In contrast to inequality and education in the case of East Java Province, according to the estimation results, education affected the size of inequality in the area. This finding is contrary to the findings of Stiglitz (1973); in his research, he stated that education did not cause

inequality. In East Java, this case may happen due to the indirect effect of education on inequality, where education causes individual productivity to decrease and leads individual income to stagnate so that the distribution of income between individuals is uneven.

Table 6 Granger Causality Test

No	Null Hypothesis	F- Statistic	Probability	Results
1	Poverty does not Granger cause education.	11.9287	0.0007	Rejected***
2	Education does not Granger cause poverty.	0.06269	0.8026	Accepted
3	Inequality does not Granger cause education.	0.39617	0.5298	Accepted
4	Education does not Granger cause inequality.	19.8002	1.E-05	Rejected***
5	Unemployment does not Granger cause education.	6.49889	0.0122	Rejected**
6	Education does not Granger cause unemployment.	3.87871	0.0514	Rejected*
7	Poverty does not Granger cause inequality.	20.2439	1.E-05	Rejected***
8	Inequality does not Granger cause poverty.	0.31332	0.5763	Accepted
9	Inequality does not Granger cause unemployment.	2.62817	0.1078	Accepted
10	Unemployment does not Granger cause inequality.	2.14986	0.1454	Accepted
11	Unemployment does not Granger cause poverty.	1.80707	0.1816	Accepted
12	Poverty does not Granger cause unemployment.	2.97999	0.0871	Rejected*

* indicates significant at *10%, **5%, ***1% level respectively.

In this study, unemployment and education had a two-way relationship, indicating that both increased and decreased levels of unemployment depend on the level of education achieved by people in the whole province. On the other hand, a change in educational level would affect the level of unemployment respectively. These results align with Mincer (1991) that the success or failure of a person in finding a job depends on the high education taken by the individual. In addition, the higher the level of education, the more probability of staying in the current job will be greater than those with low education.

Then, in this research, poverty and inequality had a one-way relationship, where poverty causes inequality. It denotes that inequality in the area gets more extensive when poverty increases. It corroborates with Beteille (2003) and Nguyen et al. (2020), where poverty will affect the inequality that occurs; thus, when poverty increases, inequality will also increase. On the other hand, when poverty decreases, inequality will decrease. This finding proves that poverty and inequality are natural things to be encountered simultaneously in an area. However, in East Java, there was a one-way relationship; it is likely because inequality from 2012 to 2017 was relatively low, but the number of poor people was still quite large, so poverty has likely caused inequality to arise.

From the estimation results, inequality and unemployment in the case of East Java Province had no relationship at all. In contrast with Morsy (2011), he stated that unemployment is one of the reasons that exacerbates inequality in an area. In the East

Java Province case, the possibility is that the inequality from 2012 to 2017 tended to be low, with an average of 0.2 based on the GINI ratio. Therefore, the estimation results showed that inequality did not cause unemployment or vice versa.

Further, poverty and unemployment had a one-way relationship, where poverty caused unemployment in East Java Province. It agrees with Mohammad and David (2019), who affirmed that unemployment indirectly affects poverty. When individuals are unemployed, their income will stop, while the necessities of their life are not; it is what makes poverty appear due to unemployment. In some cases in other countries with a relatively high level of inequality, Ogbeide and Agu (2015) found that poverty and inequality had an interrelated effect, where poverty caused inequality to rising and vice versa. However, in the case of East Java Province, it can be traced back to the relationship between poverty and education, where poverty affected education. Thus, when education stopped at a low level, indirectly, economic opportunities for work would be closed. In summary, the causal relationship found in cases in East Java in the 2012-2017 period can be explained in Figure 3.

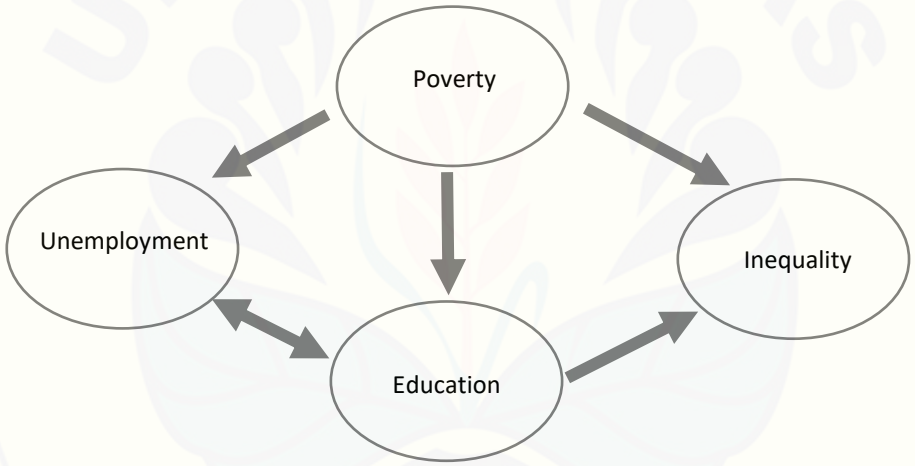

Figure 3 Summary of causality relationship between variables in East Java Province

Conclusion

The results of the Granger causality estimation showed that in this study, education had a one-way relationship to inequality. In addition, education also had a two-way relationship with unemployment. Education, therefore, has a significant role in reducing or increasing unemployment and inequality in East Java Province. In addition, poverty had a one-way relationship to each variable without an inverse relationship. It means that poverty in East Java Province came naturally or most likely came from the previous generation. It makes poverty challenging to solve in a short period.

However, based on long-term estimates using the FMOLS, it was found that poverty can be reduced by increasing education in the East Java Province. This finding indicates that

the government needs to strengthen education in East Java to reduce poverty. In addition to improving education, the government and the private sector need to create as many job opportunities as possible. It is essential because unemployment and education have a relationship with each other. It means that despite education trying to be improved by the government, if individuals do not have wages earned from working to enroll their children to receive education, the efforts to improve education are not effective enough. This study has limitations: data availability with a limited years range. It is hoped that further research will use a more extended range and a narrower level down to the household level so that the issues raised become more detailed and have firm conclusions.

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Article Type: Research Paper

Is the Digital Economy Driving the Economic Growth of the Sumatra Region During the Pandemic?

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Abstract: Digitalization has an essential role during the pandemic because it helps facilitate various economic activities. This study aims to analyze the economic digitization of financial technology on economic growth in the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) in January 2020-June 2021. We also used macroeconomic indicators in the form of inflation, foreign direct investment (FDI), and domestic investment (DI) as a control to explain economic conditions. The analysis results using the Panel Vector Autoregression (P-VAR) showed that fintech contributed positively to economic growth. This result was supported by maintained inflation stability that created a conducive investment climate, thereby attracting FDI. We recommend that the regional government take advantage of existing fintech and that "prudent" policies on inflation management must always be adequately prioritized to support the acceleration of economic growth in the Sumatra region, especially North Sumatra, West Sumatra, and South Sumatra.
Keywords: Digital Economy; Financial Technology; Inflation; Investment; Economic Growth
JEL Classification: E22; O11

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Introduction

All levels of society in Indonesia increasingly need the development of digitalization. Moreover, the Coronavirus that has hit Indonesia since 2020 has caused restrictions on activities outside in almost all regions. The government then utilizes digital technology to urge work, school, worship, and even shopping activities from home. Communication and transactions must also be carried out online to minimize mobility activities to avoid spreading the virus. The increase in digital activity in Indonesia during this pandemic is reflected, among other things, in the increase in digital competitiveness in the distribution of the East Ventures Digital Competitiveness Index (EV-DCI 2022) score. Figure 1 below shows that the national median increased from 27.92 in 2020 to 32.05 in 2021. This increase indicates that digital competitiveness in most provinces in Indonesia is getting better and more evenly distributed.

Figure 1 EV-DCI Score Distribution of Indonesia 2020-2022
Source: East Ventures Digital Competitiveness Index, 2022

Moreover, the digital transformation trend is a trigger for the growth of the digital economy, primarily supported by the high penetration of the internet in Indonesia. Amid the pandemic, the digital economy sector grew positively, even reaching 11 percent (Indonesia Ministry of Communication and Informatics). In addition, digitalization can increase efficiency from upstream to downstream and encourage investment. The following Figure 2 presents data on mapping the digitization index of various provinces in Indonesia. This index is divided into two sub-indices, namely input and output. Furthermore, it can be seen that almost all provinces have a higher input sub-index score than the output sub-index score. The input score, which is greater than the output, indicates that the distribution of skills and the use of digital technology in Indonesia is getting better but has not been matched by the ability to optimize the benefits of the digital economy.

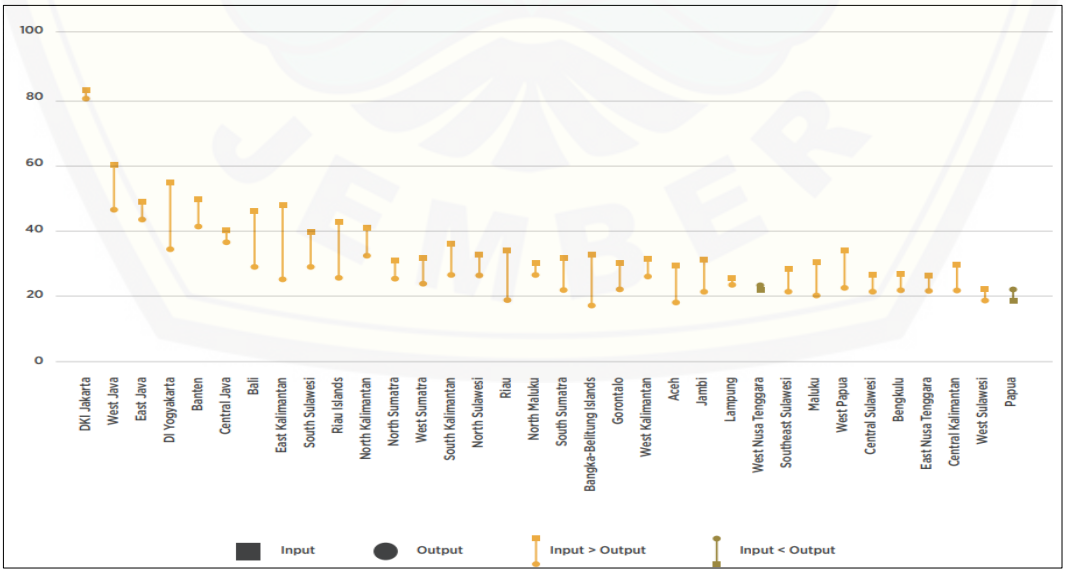

Figure 2 Province Digitization Index in Indonesia 2020
Source: East Ventures Digital Competitiveness Index, 2022

Thus, if the digital competitiveness of all provinces in Indonesia is mapped based on Figure 3 below, it can be seen that the regional scores of the provinces on Java Island lead in all pillars forming digital competitiveness. However, in certain pillars, the distribution of the scores is more evenly distributed, such as in the pillars of ICT use and employment. However, there are still significant gaps, such as in the entrepreneurship and productivity pillars and the HR pillar.

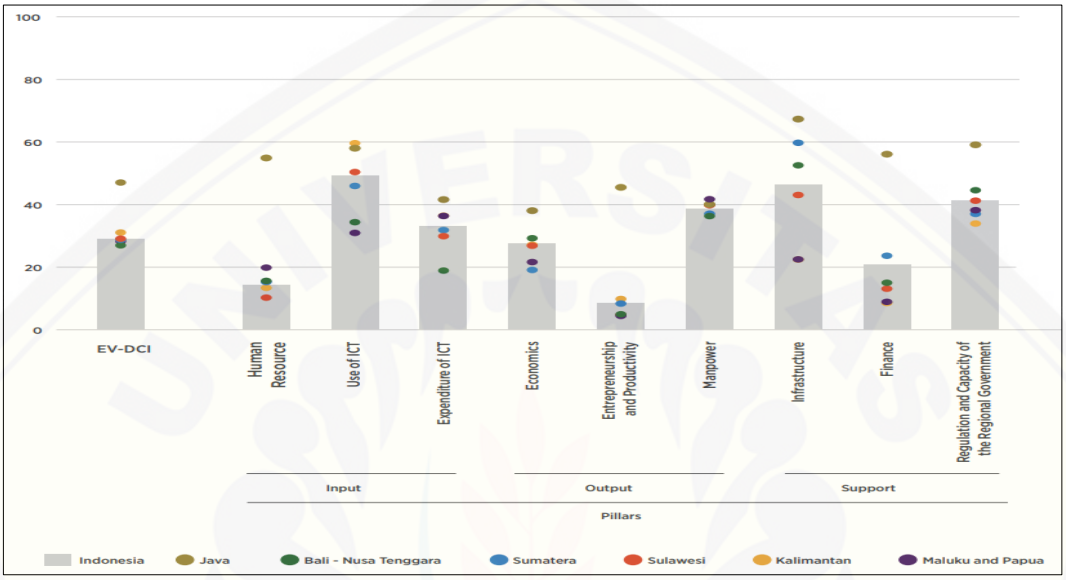

Figure 3 Province Digital Competitiveness in Indonesia
Source: East Ventures Digital Competitiveness Index, 2022

From the distribution of digital competitiveness in various provinces in Indonesia, regions with high digital competitiveness tend to be centered on Java Island. The next row is followed by provinces located in Sumatra and Kalimantan Islands, followed by provinces with low digital competitiveness from Eastern Indonesia.

Based on these facts, this paper then wants to analyze the second-highest area after Java, namely Sumatra Island. This idea emerged because Sumatra has the potential to become the second region in the development of the digital economy; besides that, there are still relatively few empirical studies that comprehensively discuss how the digital economy affects economic growth during the pandemic, especially on Sumatra Island.

Many studies have tried to focus on explaining technological factors. From the existing literature, we have understood technology to influence economic growth through several main channels. Two of these are the positive technology impact triggered by investment in new technology, primarily reflected in research and development spending (Romer, 1990; Grossman & Helpman, 1991a; Rivera-Batiz & Romer, 1991; Jones, 1995; Tahir et al. 2015), and technology transfer through economic integration, which in turn can create positive externalities and affect economic growth, such as technology transfer through trade (Grossman & Helpman, 1991b) and technology transfer through FDI or multinational companies (Rivera-Batiz & Romer, 1991; Baldwin et al. 2005; Ramondo &

Rodriguez-Clare, 2010). This literature generally views technology as positively related to economic growth.

In the banking literature, technology is seen as a solution to reduce the information asymmetry between agents (e.g., borrowers and lenders) in providing financial services (Jaffee & Russell, 1976; Stiglitz & Weiss, 1981). In particular, fintech, through the use of machine learning, is seen as significantly reducing this information asymmetry (Jagtiani & Lemieux, 2018). Machine learning algorithms enable quick and easy assessment of borrowers' credit scores, using big data from social media and other sources. Some fintech companies use blockchain to track investment and financing opportunities and store information, allowing partners to track each other and provide an element of trust (Cai, 2018). Unlike traditional banks, it also means that fintech lenders do not incur any risk (The Economist, 2015).

This transformative feature makes lending and financing more accessible and flexible. Reducing lending and financing barriers should encourage economic activity regarding easy access to funds and new investment products, such as digital coins (Aprilia & Wulansari, 2017). This new technology used by the fintech industry will further drive financial development. In this case, economic theory has pondered the role of development finance on economic growth. Besides, endogenous growth theory states that the effect of financial development on economic growth depends on the risks posed by new opportunities (Devereux & Smith, 1991; Obstfeld, 1994).

Furthermore, regarding the purpose of this paper, which is to analyze the influence of the digital economy during the pandemic on economic growth in the Sumatra region, we chose a proxy variable of interest in the form of financial technology (fintech), which is an innovation in financial services (Harahap et al., 2017). Bank Indonesia Regulation Number 19/12/PBI/2017, concerning the implementation of fintech, explains that fintech is the use of technology in the financial system that produces new products, services, technology, and/or business models and can have an impact on monetary stability, financial system stability and/or efficiency, mootness, security, and reliability of the payment system. Every year, the existence of fintech contributes significantly to changes in people's lifestyles dominated by users of information technology and the demands of a fast-paced life. Especially during the current pandemic, it helps effectively, efficiently, and economically for online lending and borrowing transactions. In addition, we used macroeconomic indicators in the form of inflation, the realization of Domestic Investment (PMDN), and Foreign Direct Investment (PMA). In this regard, inflation is used to consider that inflation symbolizes the movement of prices for goods and services in general and affects the costs arising from the side of fintech providers (Umaru & Zubairu, 2012). Meanwhile, direct investment and foreign direct investment are employed to capture the investment climate conditions both from within and outside the country during the pandemic (Afrilita & Wardani, 2019; Narayan, 2019; Wang et al., 2021).

Research Method

Research Model Specification

This study focused primarily on analyzing the effect of financial technology (as a proxy for the digital economy) with variable control in the form of macroeconomic indicators (inflation, direct investment/DI, and foreign direct investment/FDI) on the gross regional domestic product (GRDP) in the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) during the COVID-19 pandemic in the period January 2020-June 2021. This study used Vector Autoregressive (VAR) because the purpose of this study is to find out how the impact of digital economic shocks on economic growth in the Sumatra region and help explain the transmission mechanism that occurs from the development of the digital economy. The economic models in this study are:

$GRDP = f\ (Fintech, Inflation, FDI, DI)$ (1)

Furthermore, a simple VAR model with two variables can be written with the following equation.

$$y_{it} = b_{10} - b_{12}Z_{it} + \gamma_{11}\, y_{t-1} + \gamma_{12}z_{t-1} + \epsilon_{yit} \quad (2)$$

$$z_{it} = b_{20} - b_{21}y_{it} + \gamma_{21}\, y_{t-1} + \gamma_{22}z_{t-1} + \epsilon_{zit} \quad (3)$$

Notes:
y_{it} and z_{it} are assumed to be stationary. ϵ_{yit} and ϵ_{zit} are *white noise disturbances with* a standard deviation of σ_y and σ_z. $\{\epsilon_{yit}\}$ and $\{\epsilon_{zit}\}$ are white noise uncorrelated disturbances. ϵ_{yit} and ϵ_{zit} are innovations or shocks to y_t and y_z. Equations (2) and (3) have a reciprocal structure because y_t and z_t influence each other. Thus, using matrix algebra, it can be written as follows.

$$\begin{bmatrix} 1 & b12 \\ b21 & 1 \end{bmatrix}\begin{bmatrix} yt \\ zt \end{bmatrix} = \begin{bmatrix} b10 \\ b20 \end{bmatrix} + \begin{bmatrix} y11 & y12 \\ y21 & y22 \end{bmatrix}\begin{bmatrix} yt-1 \\ zt-1 \end{bmatrix} + \begin{bmatrix} \epsilon yt \\ \epsilon zt \end{bmatrix}$$

Thus, the equation of the VAR model in this study can be written as follows.

$$Log\_GRDP_{it} = \alpha_0 + \alpha_1\, Fintech_{it} + \alpha_2 Inflation_{it} + \alpha_3 Log\_FDI_{it} + \alpha_3 Log\_DI_{it} + \varepsilon_{it} \quad (4)$$

Where i indicates the province, t indicates the period. GRDP is the total Gross Regional Domestic Product (GRDP). α_0 is constant. $\alpha_{1,2,3,4}$ are coefficients that estimate each potential effect of exogenous variables on endogenous variables described in this study. Then, fintech is the number/unit of fintech. While inflation is the amount of inflation, FDI is the amount of foreign investment, and DI is the amount of domestic investment. ε_t is an error term that substitutes all variables omitted from the model but still impacts the compiled model.

Data Sources and Types

This study used panel data in North Sumatra, West Sumatra, and South Sumatra during the COVID-19 pandemic, namely January 2020-June 2021. The following Table 1 presents a list of variables used in this study in more detail.

Table 1 Research Data

Variables	Source	Unit	Period
GRDP	Statistics Indonesia	Rupiah	2020M01-2021M06
Fintech		Unit	2020M01-2021M06
Inflation		Percent	2020M01-2021M06
FDI		Rupiah	2020M01-2021M06
DI		Rupiah	2020M01-2021M06

VAR Analysis Stages

Stationarity Test

One important concept that must be considered by using time series or panel data is whether the data are stationary. If the estimate is made using non-stationary data, the validity and stability of the data need to be reconsidered since the regression results from non-stationary data will be dubious or called blunt regression (Gujarati, 2003; Wardhono et al., 2016). Stationarity can be done using the unit root test. This study employed the unit root test with Augmented Dickey-Fuller (ADF).

$$\Delta Y_{it} = \delta Y_{it-1} + \mu_{it} \qquad (5)$$

The ADF test assumes that t is correlated, so it is formulated that:

$$\Delta Y_{it} = \alpha_0 + \alpha_1 Y_{it-1} + \sum_{i=1}^{k} \beta_i \Delta Y_{t-i} + \mu_t \qquad (6)$$

Notes:

Δ is the first difference of the variables used in the study. At the same time, t is the trend variable, and k is the length of the lag used. The hypotheses for this test are H0: δ = 0 (there is a unit root), H1: δ # 0 (there is no unit root).

Optimum Lag test

The lag test is used to find the lag optimum to get the best SVAR model. Lag testing determines the length of the period of influence of a variable on the variable itself and other variables. Determination of lag in this study used the minimum AIC value to provide additional variable intervals to reduce the degrees of freedom (Widarjono, 2009).

Model Stability Test

A stable condition is met in this test if all the roots lie in a unit circle. In other words, a stable condition is met when the absolute root value is less than one. The VAR stability test was carried out by calculating the roots of the polynomial function (Gujarati, 2003).

Impulse Response Function (IRF)

IRF is used to determine the effect of the standard deviation of the variable shocks on the current and future values. The shock of a variable affects the variable itself and all endogenous variables through the lag structure in the VAR model. IRF is also a method that functions to analyze the response of endogenous variables to shocks of certain variables. IRF can be used to measure the magnitude (in percentage), orientation, and length of response between variables and evaluate the transmission mechanism's speed (Widarjono, 2009).

VAR also uses VD to test which variable shocks have the most influence on the variation of the variable of interest. VD separates the variation of the endogenous variable into several shock components. In contrast to IRF, VD describes the proportion of the contribution of endogenous variables (in the form of percentages) in the SVAR model to shocks.

Result and Discussion

Research Data Overview

This study used panel data in three provinces located on Sumatra Island with the assumption mentioned at the outset that these three provinces have relatively high digitalization competitiveness. Before describing the data processing results, we first describe the conditions of each research variable in each province.

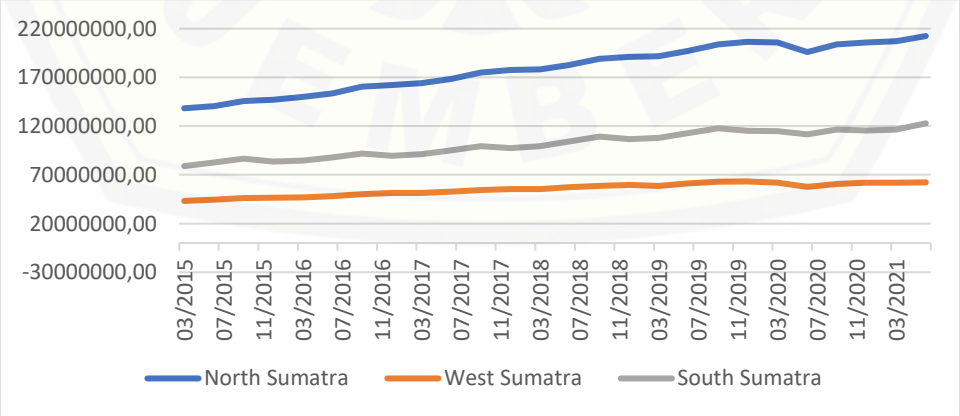

Figure 4 GRDP (Million Rupiah)
Source: Statistics Indonesia, 2021

Figure 4 is a plot of the amount of GRDP from 2015Q1-2021Q2, where the red box indicates the observation period that we used in this study because we wanted to focus on analyzing economic growth during the pandemic (2020-2021). From Figure 4, among other things, it can be seen that the overall pattern shows that GRDP had an increasing trend in all provinces until it finally declined around the beginning of 2020. This condition was partly due to the COVID-19 pandemic, affecting various economic activities both in general and sector. Furthermore, it can be observed again that starting mid-2020, there has been an increase in the GRDP trend in the three provinces. The data plot further supports the urgency to conduct further research focusing on the conditions or period of the pandemic. Such research will help analyze more persistently what determination and how much influence it has on accelerating economic growth, perhaps even finding new engines as a source of economic growth to mitigate the risk of a pandemic.

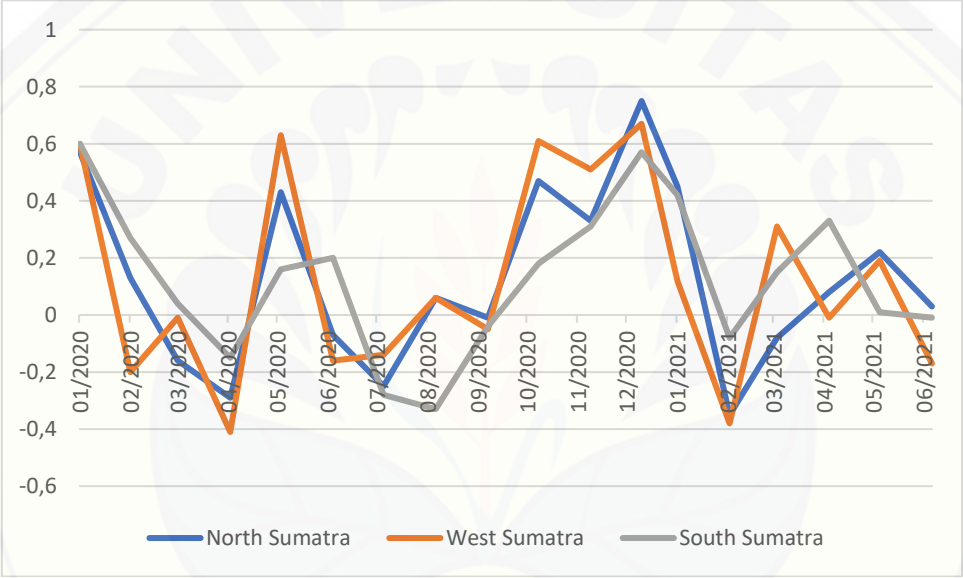

Figure 5 Inflation (Percent)
Source: Statistics Indonesia, 2021

Figure 5 is a plot of inflation during the pandemic, from January 2020-June 2021. From the figure, it can be seen that the movement of inflation in the three provinces was uniform, meaning that the increase and decrease had the same direction, and the gap was not significant. In addition, the amount of fluctuation was still relatively controlled. The existence of these conditions indicates that inflation conditions during the pandemic in the three provinces are still relatively stable.

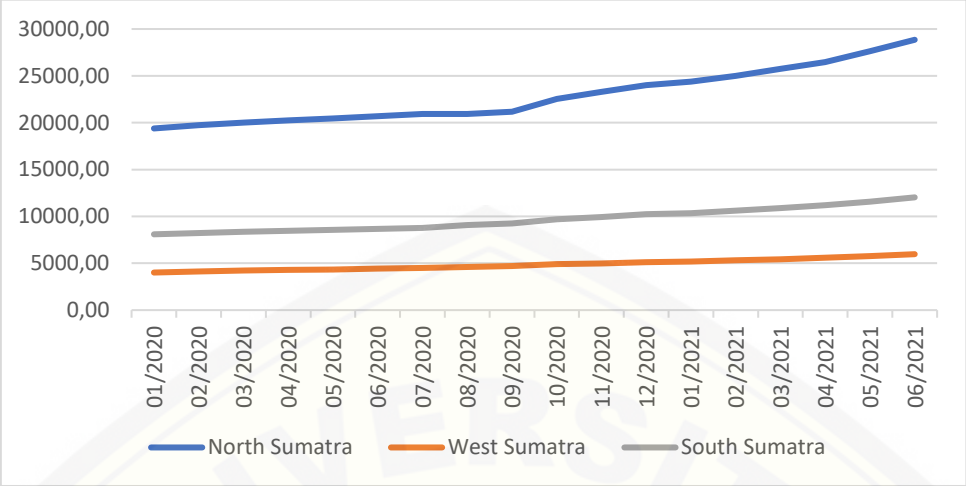

Figure 6 Accumulated Number of Lender Accounts (Unit of Entity)
Source: Statistics Indonesia, 2021

Figure 6 is a plot of the accumulation of the number of lender accounts (entity units) that we used as financial technology proxies during the pandemic, namely from January 2020-June 2021. From the figure, the movement of the number of lenders in the three provinces increased. This condition can be an early indication of a shift in transactions, for example, before the pandemic, which was more traditional or face-to-face to use more technology after the pandemic, applied to economic transactions in financial product services. The existence of pandemic also further causes various groups to receive a lower income than usual or even experience termination of work due to the effects of restrictions on social activities so that in the end, the increase in existing fintech will be needed by the community, for example as capital to do new businesses and so on.

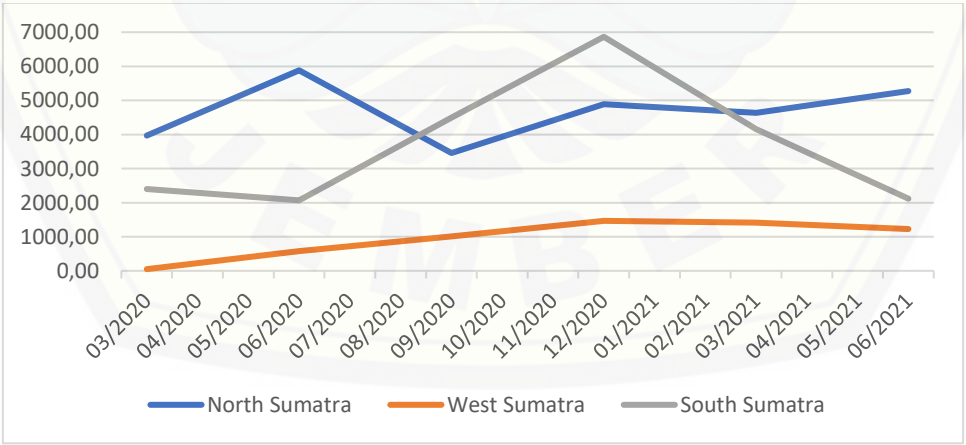

Figure 7 Domestic Investment (Billion Rupiah)
Source: Statistics Indonesia, 2021

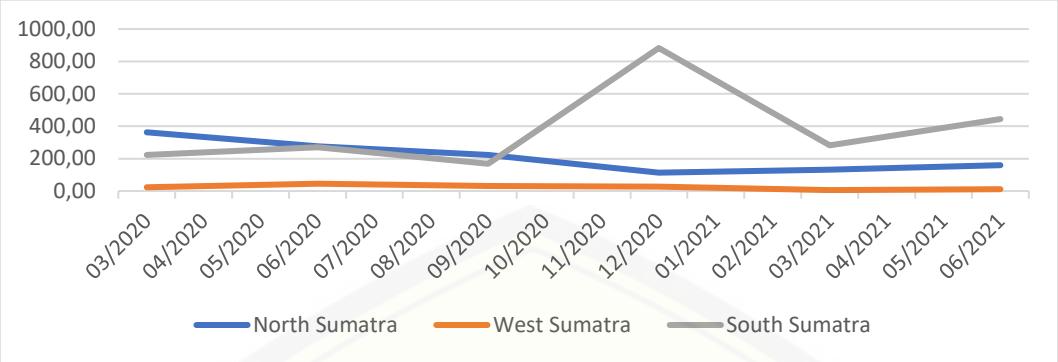

Figure 8 FDI (Million USD)
Source: Statistics Indonesia, 2021

Figures 7 and 8 show direct investment (DI) and foreign direct investment FDI plotting during the pandemic from January 2020 to June 2021. From the three provinces, it can be observed that South Sumatra had a large proportion of DI and was especially the most significant proportion of FDI compared to the other two provinces. Then, it was followed by North Sumatra, which tended to be larger in DI, and South Sumatra, which tended to be smaller in DI and FDI than other provinces. Overall, the fluctuating movement, significantly increased during the pandemic, is quite interesting to analyze further because, of course, there are pull factors why investors from inside and outside the country invest their funds in these provinces.

Test Results

Stationarity Test

Based on the unit root test results in Table 2, it can be seen that the GRDP variable was stationary at the first difference, while fintech was stationary at the second difference. Then, inflation, FDI, and DI were stationary at the level.

Table 2 Result of Stationarity Test

Log GRDP	Prob.
Level	0.4740
1st*Difference*	0.0651*
Fintech	**Prob.**
Level	1.0000
1st*Difference*	0.9708
2nd*Difference*	0.0426**
Inflation	**Prob.**
Level	0.0143**
Log FDI	**Prob.**
Level	0.0912*
Log DI	**Prob.**
Level	0.000***

Notes:
***, **, and * each show a significance level of 1%, 5%, and 10%.

Optimum Lag Test

The optimum lag selection was to get the best VAR model used in the study. VAR estimation is very sensitive to the lag length used. Determining the proper lag also has implications for freeing the model from autocorrelation and heteroscedasticity problems (Gujarati & Porter, 2009). This lag test determines the length of the influence period of a variable on its past and other endogenous variables. In this study, the lag determination used the Akaike Information Criterion (AIC) to provide additional variable intervals to reduce the degrees of freedom. Therefore, the optimal interval would be found in the model specifications providing the minimum AIC value (Widarjono, 2009). From the lag test results in Table 3, it can be seen that the minimum AIC value was at lag 1.

Table 3 Result of Optimum Lag Test

Lag	LR	FPE	AIC	SC	HQ
0	NA	0.084673	11.72039	11.92113	11.79522
1	233.2405*	.000655*	6.850976*	8.055418*	7.299980*

Notes: *indicates each smallest lag value.

Model Stability Test

In order to test the stability of the VAR model, a stability test was carried out using the inverse root of the polynomial characteristics. The number of roots tested is the number of research variables multiplied by the number of lags used. In this regard, this study used five variables multiplied by the number of lags, namely 1, so that the number of roots was 5x1=5. From the stability test results in Figure 9, it can be seen that the VAR estimation was stable so that the VAR model could be continued for IRF analysis.

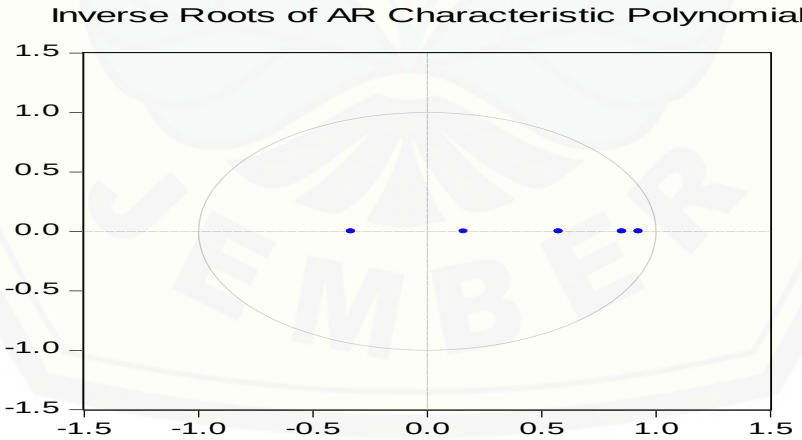

Figure 9 Result of Model Stability Test

Impulse Response Function (IRF)

The following IRF shows how the influence of the standard deviation of innovation on the values of current and future endogenous variables. The shock of the first endogenous

variable affected the variable itself and other endogenous variables through the VAR model. Under the objectives of this study, the following shows the respective effects of fintech shocks, inflation, PMA, and PMDN on economic growth in the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) as proxied by GRDP for the period January 2020-June 2021.

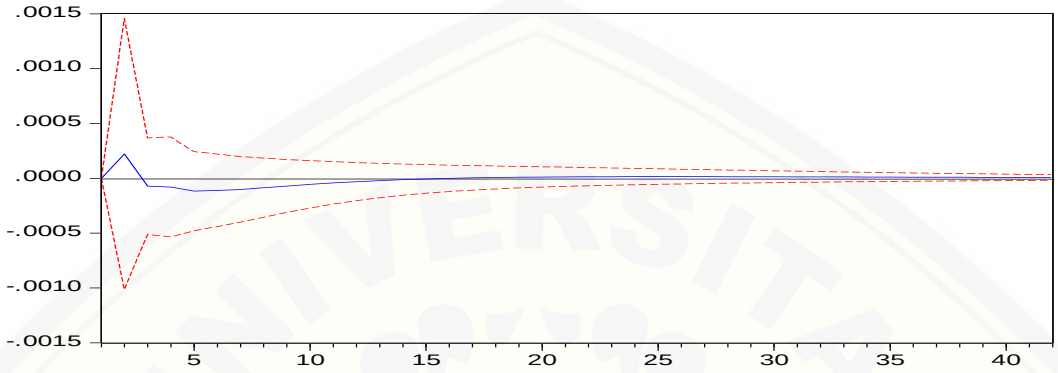

Figure 10 GRDP Response to Fintech

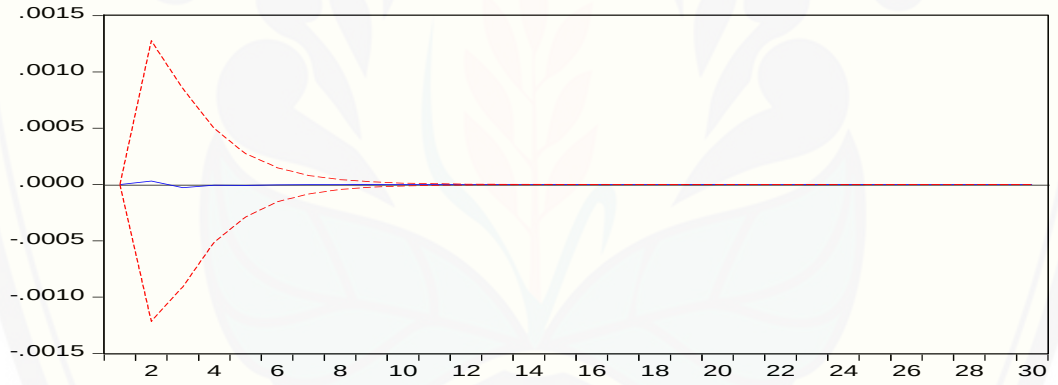

Figure 11 GRDP Response to Inflation

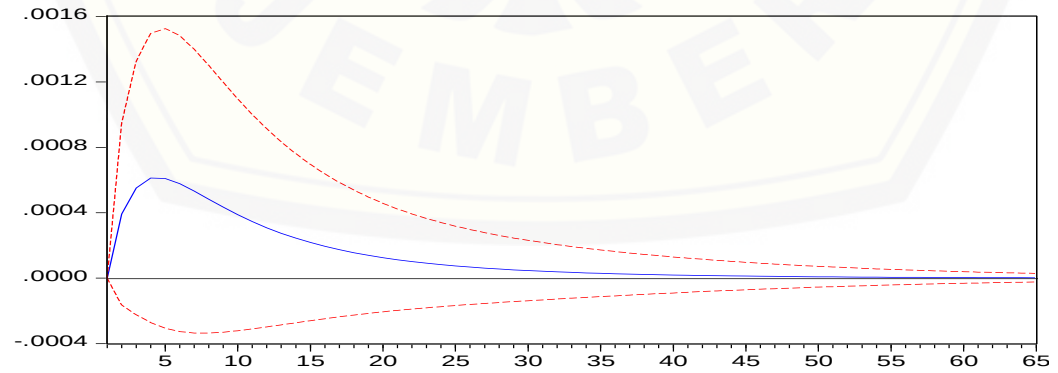

Figure 12 GRDP Response to FDI

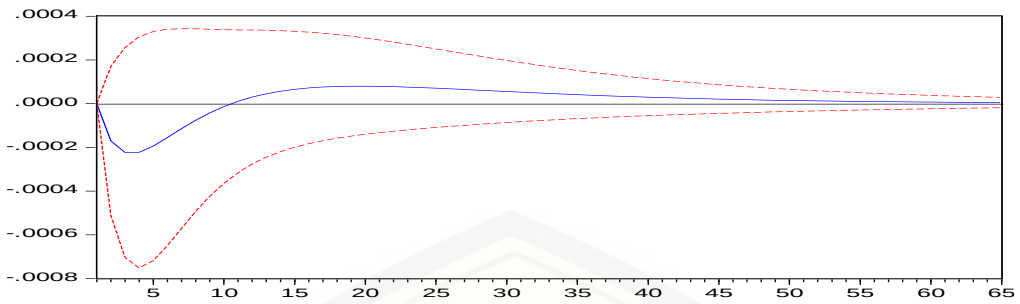

Figure 13 GRDP Response to DI

Figure 10 illustrates the GRDP response to one standard deviation of changes in the fintech shock. The figure shows that GRDP responded positively to fintech shocks of up to 0.002 percent from the 1st to the 3rd period. Next, in the 4th to 11th period, a slightly negative response reached -0.00007 percent. It can be seen that GRDP reached a convergent condition, which means that it returned to neutral to its original balance point starting from the 12th period, or it can be said that there was no longer any influence of fintech shocks on GRDP. Figure 11 shows the GRDP response to one standard deviation of changes in inflation shocks. From this figure, it can be seen that GRDP tended not to respond to inflationary shocks during the current pandemic.

Next, from Figure 12, it can be seen that GRDP responded positively to shocks caused by FDI starting in the first period, where it peaked in the fifth period reaching 0.006 percent. Then, the response began to shrink until, in the 47th period, the movement was towards the original equilibrium, or there was no longer any influence of FDI on GRDP. Finally, from Figure 13, it can be seen that GRDP responded negatively to PMDN shocks from the first period to its peak in the fourth period reaching -0.002 percent. Furthermore, starting from the 10th period, there was a positive response. Then, there was no effect of PMDN on GRDP starting from the 55th period.

Variance Decomposition (VD)

The VD results in Table 4 provide information about the contribution of each variable to the GRDP panel variable for the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) during the pandemic period of January 2020-June 2021.

Table 4. Result of Variance Decomposition

Period	Fintech	Inflation	FDI	DI	GRDP
1	0.000000	0.000000	0.000000	0.000000	100.0000
2	0.214893	0.047586	0.671054	0.126930	98.93954
3	0.216249	0.044856	1.817314	0.313689	97.60789
4	0.232041	0.046112	3.177927	0.490789	96.05313
5	0.278166	0.045353	4.492479	0.620241	94.56376
6	0.318958	0.044666	5.651245	0.699231	93.28590
7	0.352957	0.044692	6.616921	0.738702	92.24673
8	0.376650	0.045846	7.398261	0.752920	91.42632
9	0.391953	0.048332	8.019705	0.753930	90.78608
10	0.400853	0.052078	8.509487	0.750257	90.28733

In the first period, GRDP was heavily influenced by the GRDP shock itself by 100 percent. Meanwhile, in the first period, fintech, inflation, PMA, and PMDN had not yet given a shock to GRDP. Furthermore, from periods 2 to 10, the proportion of GRDP shocks was still significant at around 90 percent. Meanwhile, fintech shocks, inflation, PMA, and PMDN had an increasing contribution with consecutive values in the 10th period, reaching 0.40 percent, 0.05 percent, 8.5 percent, and 0.75 percent, respectively.

Discussion

In general, from the results of the VAR analysis series, we can explain that the digital economy represented by fintech has proven to have a positive impact on economic growth in the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) in January 2020-December 2021 period. These results support our hypothesis. Previously, the digitalization of the economy could become an alternative to boost the economy, especially during the current pandemic. In this case, fintech will help reduce the economic and social impact of the pandemic.

Moreover, the financial system plays a significant role in channeling funds from excess parties to those in need so that economic activities can run effectively and efficiently (Matthews et al., 2013). The financial market can be done through direct financing or indirect financing. The essential difference between the two types is the existence of intermediary financial institutions in indirect financing that shape disbursing funds. The role of intermediary financial institutions is crucial in this flow of funds since they can reduce transaction costs, have a risk-sharing system, and prevent adverse selection and moral hazard by providing symmetrical information. Thus, owners and borrowers of small amounts of funds can participate in financial markets, thereby increasing overall efficiency in the economy (Matthews et al., 2013; Wardhono et al., 2018). The efficiency in question allows limited resources for productive activities and can significantly boost economic growth.

Integrating technological elements into fintech will subsequently have a more significant impact on the economy. Previously, the formal financial system itself had reduced information asymmetry between financial actors. Moreover, coupled with the presence of technology (especially information technology), it would further push financial services to a higher level and increase the efficiency of financial services. The development of information technology today increasingly allows unlimited data access and encourages the creation of added value from previously unoptimized data. The abundance of accurate and real-time data will significantly reduce the potential for asymmetric information (Wardhono, 2014; Ilman et al., 2019).

Therefore, having fintech in strategic partnerships with financial institutions, retailers, and the government sector in all jurisdictions will help democratize financial services by providing essential financial services fairly and transparently to economically vulnerable populations due to the pandemic conditions. As more and more global economic and financial systems continue to move online, cyber defense or security to protect user data needs to be a future concern. Hence, fintech providers must also realize the importance

of security in designing their products. In addition, given the increasing dependence on technology, we believe that digital transformation will still be the primary focus that will highlight policies in every region and even in every country. Therefore, in addition to local governments needing to recognize the potential of their regions, they must also know the importance of providing efficient, effective, and sustainable banking services, which include adopting a more holistic approach to digital transformation, including utilizing fintech.

Next, we can explain that the inflation variable, an indicator of the development of prices for goods and services, was not too influential on economic growth in this study. The regional government has prudently maintained the level of inflation so that in the January 2020-June 2021 period, there were no volatile movements, meaning that inflation was in a stable condition. Furthermore, the stability of the inflation rate is a good signal for investors, captured in this research model that FDI had a positive impact on economic growth. This positive impact is under our explanation at the beginning that digital competitiveness in these three regions (North Sumatra, West Sumatra, and South Sumatra) is relatively high. It is also supported by IRF results that the digital economy's contribution by fintech has proven to increase economic growth. Therefore, when competitiveness is high, fintech development is high, and price conditions (inflation) are maintained; thus, the owners of capital will have more preferences to invest in the region. This research model also captures that FDI contributed more to economic growth. We assume that foreign investors tend to have much more significant capital during a pandemic. Their country may have experienced less contraction in its economy to invest. Meanwhile, for domestic investors, we suspect that the Indonesian economy, in general, is still experiencing contraction due to the pandemic, causing investors to reduce their preferences to invest.

Conclusion

The development of the digital economy proxied by fintech in the Sumatra region (North Sumatra, West Sumatra, and South Sumatra) in the January 2020-June 2021 period with VAR panel regression has proven to have a positive contribution to economic growth. These results were supported, among other things, by the maintained condition of price stability as reflected by inflation. In addition, this condition has also created a favorable investment climate, where it is proven that FDI has contributed to increased economic growth. Therefore, it is hoped for the regional government that this fintech development trend can be utilized optimally as an alternative to encourage economic growth and as an alternative to minimize the impact of the pandemic on economic activities. In addition, macroeconomic indicators in the form of inflation need to be appropriately maintained since they reflect the stability of the regional economy, which also impacts the costs of fintech providers and the decision of investors to invest their funds. The existence of security in fintech also needs to be a concern for the government and fintech providers because the increasingly sophisticated digitalization era also poses many threats, such as cyber security and cybercrime.

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