International Journal of
Economics Development Research, Volume 4(2), 2023
pp. 925-943

The Effects of Tax Education and Tax Supervision During the Covid-19 Pandemic on Tax Revenue Through Tax Compliance

Said Faiz Alamien [1], Sugeng Mulyono [2], Rini Astuti [3],
Endang Suswati [4]

Abstract:

This study sought to identify the effects of tax education and tax supervision during the Covid-19 pandemic on tax revenue through tax compliance. The population in this study was 1,550 Corporate Taxpayers engaged in the trade sector that are registered in the Singosari Tax Office. Using Slovin's formula, 94 Taxpayers were selected as samples. Accidental sampling technique was used and data were collected by distributing questionnaires. Explanatory research using a quantitative approach was considered the most appropriate. Primary data came from respondents' answers to the questionnaire using a Likert scale of 1 to 5. Partial Least Square (PLS) was used to test the hypotheses of the study with the help of SmartPLS 4.0. The results show that tax education, tax supervision and tax compliance positively and significantly affect tax revenue, tax supervision positively and significantly affects tax compliance, tax education has no positive and significant effect on tax compliance, tax compliance cannot mediate tax education against tax revenue, and tax compliance partially mediates tax supervision against tax revenue.

Keywords: *Tax Compliance, Tax Education, Tax Revenue, Tax Supervision*

1. Introduction

Covid-19 pandemic extensively crippled the world economy in 2020. IMF (2021) reported that Gross Domestic Product (GDP) of nearly all countries in the world saw negative growth in 2020, with only Iran and Turkey experiencing positive growth. In 2021, The IMF projected that Indonesia's GDP will see positive growth of 4.8%. In the 2021 APBN Information, Finance (2021) stated that the outlook for global economic growth in 2020 worsened due to the pandemic, the outlook for economic growth in several developing countries experienced a slight decline amidst the ongoing escalation of Covid-19, as well as contractions in large countries such as India. In the 2020 outlook, projections as of October 2020, Indonesia's economic growth is -1.7% to 0.6%. Key factors in promoting economic growth are Covid-19 mitigation as well as fiscal stimulus support to maintain the National Economic

[1]*Universitas Gajayana Malang, Indonesia.* said.alamien@gmail.com
[2]*Universitas Gajayana Malang, Indonesia.* sugengmulyono@unigamalang.ac.id
[3]*Universitas Gajayana Malang, Indonesia.* riniastuti@unigamalang.ac.id
[4]*Universitas Gajayana Malang, Indonesia.* endangsuswati@unigamalang.ac.id

Recovery (PEN) program in regard to the recovery and expansion of the global economy.

To prevent further economic slump, on March 31, 2022, Government Regulation in Lieu of Law Number 1 of 2020 has been issued concerning State Financial Policy and Financial System Stability for Mitigating the 2019 Corona Virus Disease (Covid-19) Pandemic and/or when Threats to the National Economy and/or Financial System Stability are Present. Furthermore, the government also issued Government Regulation Number 23 of 2020 on May 9, 2020 concerning National Economic Recovery Program in order to encourage state financial policy for minimizing the 2019 Corona Virus Disease (Covid-19) pandemic and/or addressing challenges to the stability of the financial system and the recovery of the national economy. In addition, on June 24, 2020, the government has stipulated Presidential Regulation Number 72 of 2020 concerning Amendments to Presidential Regulation Number 54 of 2020 concerning Changes in the Posture and Details of the State Revenue and Expenditure Budget for the 2020 Fiscal Year.

The total cost required for the National Economic Recovery (PEN) program was Rp589.65T, of which Rp205.20T was allocated for demand side recovery and Rp384.45T for supply side recovery. This recovery costs did not include health costs amounting to Rp87.55T; thus, the total PEN costs and health costs for mitigating Covid-19 were Rp677.20T. According to article 6 of Government Regulation Number 23 of 2020, funds for implementing the PEN Program can be sourced from the State Revenue and Expenditure Budget and/or other provisions in accordance with statutory regulations. In accordance with Presidential Regulation Number 72 of 2020, The government calculated the State Revenue Budget for the 2020 fiscal year at Rp1,699T, with Rp1,404T coming from tax revenue, Rp294T from Non-Tax State Revenue and Rp1.3T from grant funds.

Of the tax revenue of Rp1,404T, the Directorate General of Taxes (DJP) collected tax revenue amounting to Rp1,198T, 70.52% of the total State Revenue Budget, while the Directorate of Customs and Excise (DJBC) collected tax revenue of Rp206T, amounting to 12.12% of the total State Revenue Budget. Even though DJP tax revenues fell from the previous year's target of Rp1,577T, it is understood that carrying out the mandate to collect tax revenues in 2020 was not an easy task because nearly all business actors in Indonesia have been impacted by the Covid-19 pandemic. Therefore, the DJP only managed to collect Rp1,072T, 89.42% of the mandated tax revenue target in the end of 2020.

In 2020, the Singosari Tax Office, which is one of the vertical units of the DJP, collected tax revenues amounting to Rp643,307,949,000.00, up by 0.37% from the revenue achieved in 2019, namely Rp640,960,363,691.00. Considering the Covid-19 pandemic affecting practically all business actors in Indonesia, even around the world, achieving the mandated tax revenues felt like a Sisyphean task. However, unexpectedly, in 2020, the Singosari Tax Office achieved tax revenue of Rp672,498,178,468.00, 104.54% of the mandated target, up 4.92% from the 2019

revenue achievement. In the last five years, the Singosari Tax Office managed to meet the targets mandated in 2016 and 2020.

Table 1. Targets and Achievements of Tax Revenue of the Singosari Tax Office

Years	Targets (Rp)	Achievements (Rp)	(%)	Growth
2016	681.195.162.000	506.359.002.123	74,33%	2,73%
2017	549.182.976.000	562.635.144.262	102,45%	11,11%
2018	779.576.981.000	634.757.387.098	81,42%	12,82%
2019	785.149.230.000	641.303.351.978	81,68%	1,03%
2020	643.307.949.000	672.498.178.468	104,54%	4,86%

Source: Processed Data (2021)

In table 1 above, we can see that each year, the targets given to the Singosari Tax Office are always increasing, except in 2017 and 2020. In 2017, the government enacted a tax amnesty program in hope that repatriation and declaration of assets submitted by taxpayers would increase domestic investment and tax compliance. Meanwhile in 2020, the government promised tax incentives to business actors to support PEN and mitigation of Covid-19. This incentive reduced the tax revenue target.

The researcher's interest in examining the Singosari Tax Office was sparked by the inconsistency in data for the last five years of the Singosari Tax Office in achieving the set tax revenues. Researchers are also interested in identifying indicators that can influence tax revenues. Amilin (2016) stated that tax revenue is influenced by counseling, supervision and inspection through tax compliance. Sari et al. (2020) stated that tax revenue is influenced by tax education through tax compliance. Researchers are interested in combining Amilin and Sari's statements, that tax revenue is influenced by tax education and tax supervision through tax compliance. Based on the achievement of strategic goals for tax revenue, tax compliance, tax supervision and tax education of Singosari Tax Office in 2016 until 2020 as follows:

Table 2. Achievement of Strategic Goals for Tax Revenue, Tax Compliance, Tax Supervision and Tax Education of Singosari Tax Office in 2016 until 2020

Strategic Goals	2016	2017	2018	2019	2020
Tax Revenue	62,81%	109,47%	95,37%	65,04%	113,37%
Tax Compliance	87,47%	110,45%	100,56%	103,36%	107,40%
Tax Supervision	116,09%	113,54%	63,50%	120,00%	115,39%
Tax Education	120,00%	120,00%	120,00%	118,82%	113,23%

Source: Processed Data (2021)

The relationship between the four variables above which shows a positive relationship occurs in the 2017 and 2020 achievements, while in 2016, 2018 and 2019 the relationship between the four variables does not show a positive relationship.

Especially in 2019, all variables that support tax revenue reached more than 100%, but the tax revenue variable reached only 65.04%, the relationship between these four variables is very interesting to research. Therefore, researchers are interested in conducting research on tax education and tax supervision during the Covid-19 pandemic on tax revenues through tax compliance

2. Theoretical Background

Research on tax education, tax supervision, tax compliance, and tax revenue is abundant with varied research variables. On tax education, Putriani and Budiartha (2016) conducted a study of the Effect of Tax Education and Taxation Service on Corporate Income Tax Revenue. Their results show that tax education and taxation service positively affect corporate income tax revenue. Kwok and Yip (2018) expressed similar findings. In their study on the effect of tax education on tax compliance in Hongkong, tax education has a significant effect on tax compliance in Hongkong. However, it is contrast to Kwok and Yip (2018), Aondo (2019) discovery that no significant effect was found from tax education on tax compliance.

On tax supervision, Subhan and Susanto (2020), who conducted a study on the Effect of Tax Consulting and Tax Supervision by Account Representatives on Tax Compliance at the DJP Primary Tax Service Office Makassar, expressed that simultaneous and partial tax consulting and supervision by Account Representatives have a positive and significant effect on tax compliance. Similarly, Deli and Murtani (2019), through their study on the Effect of Service Quality and Supervision Effectiveness on Tax Compliance with Competence as a Moderating Variable at the Polonia Primary Tax Service Office, Medan, stated that service quality and supervision effectiveness have a positive and significant on tax compliance, although Account Representative competence does not moderate the variable relationship.

On tax compliance, Yudistira (2020) in their study on the Effect of Tax Education and Tax Sanctions on Tax Compliance: MSME Actors' Perceptions in Makassar City, stated that tax education and tax sanctions simultaneously affect tax compliance. In the same vein, Gitaru (2017) in their study on the effect of tax education on tax compliance in Kenya (A Case Study of SME in Nairobi Central Business District) stated that all variables of tax education affect tax compliance among MSMEs in Nairobi's CBD area. Different results were presented by Damanik (2018) in their study on the Effect of Education, Electronic Application and Audit on Tax Compliance in Asahan Regency. They stated that electronic system applications and tax audits have an effect on tax compliance while tax education has no significant effect.

Sari et al. (2020) conducted a study on the Effect of Tax Education on the Realization of Tax Revenue with Tax Compliance as an Intervening Variable. Their results show that tax education has a positive effect on the realization of tax revenue through tax compliance. Astuti and Panjaitan (2017) reported contrasting results in their study on the Effect of E-invoicing and Tax Education on Tax Revenue with Tax Compliance

as a Moderating Variable at the Sunter Primary Tax Service Office, North Jakarta. They demonstrated that e-invoicing significantly affects tax revenue, tax education has no significant effect on tax revenue, tax compliance does not moderate variables e-invoicing and tax knowledge against tax revenue.

On tax revenue, in Rakhmadani's (2020) study on the Effect of Levels of Tax Compliance and Tax Collection on Tax Revenue (A Case Study at the Head Office of the Directorate General of Taxes), levels of tax compliance and tax compliance affect tax revenue. Similarly, Manurung and Banjarnahor (2020) stated in their study on the Effect of Tax Audit, Tax Collection and Tax Compliance on Tax Revenue in Batam City that the three variables simultaneously and partially affect tax revenue. Kastolani and Ardiyanto (2017) in their study on the Effect of Levels of Tax Compliance and Audit on Income Tax Revenue stated that tax compliance and tax audit have a positive and significant on income tax revenue. Waluyo (2016) in their study on the Effect of Addition of Taxpayers Number, Tax Audit, Tax Billing dan Taxpayers Compliance toward Tax Revenue stated that adding those variables affects tax revenue, with tax collection being the exception.

In particular, this study is the natural development of the study by Amilin (2016) entitled the Role of Counselling, Supervision and Audit by Tax Officers in Encouraging Tax Compliance and Its Effect on State Revenue with SEM analysis tool using the LISREL method. Amilin used counseling, supervision and audit as independent variables, tax revenue as dependent variable and tax compliance as mediating variable. This study is similar in several ways to Amilin's study. The differences lie in the fact that the researcher used tax supervision and education as independent variables and SEM analysis with the PLS method. The conceptual framework in this study is as follows:

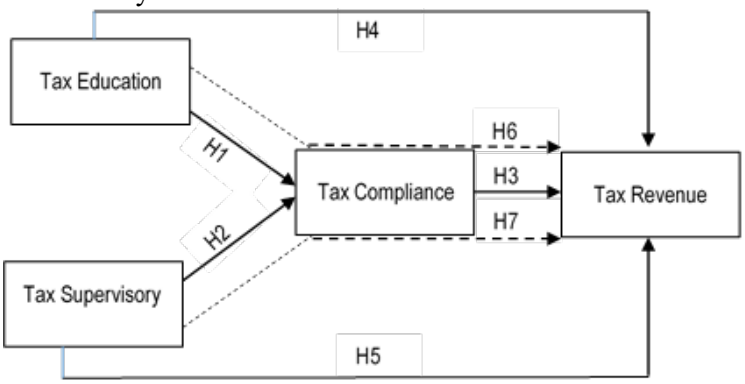

Figure 1. Conceptual Framework of the Study

Formulated in view of the research objectives, theoretical basis, past research, the above conceptual framework, the hypotheses of this study are as follows:
H1: Tax education has a positive and significant effect on tax compliance
H2: Tax supervision has a positive and significant effect on tax compliance
H3: Tax compliance has a positive and significant effect on tax revenue
H4: Tax education has a direct, positive and significant effect on tax revenue

H5: Tax supervision has a direct, positive and significant effect on tax revenue
H6: Tax education has a positive and significant effect on tax revenue through tax compliance
H7: Tax supervision has a positive and significant effect on tax revenue through tax compliance

3. Methodology

Research Design
This was explanatory research, aimed at explaining an existing phenomenon. It was intended to explain the role of the variables under study and their relationships with one another (Sugiyono, 2011). In this case, quantitative approach was applied by first collecting data and defining related variables. These variables derived from existing theories, which are then reduced to research hypotheses accompanied by measurement and operational variables. The notion that a symptom can be characterized and that the link between a symptom and construct factors is causal (cause and effect) drove the quantitative method (Sugiyono, 2011).

Population and Sample
The population involved was 1,550 taxpayers engaged in the trade sector registered in the Singosari Tax Office. Using Slovin's formula, 94 samples were obtained. For usage in every study, a sample size of larger than 30 and fewer than 500 is adequate (Sekaran, 2000). Furthermore, accidental sampling technique was used, where the most accessible individual or unit was picked as the sample (Singgih and Tjiptono, 2001). This technique was chosen on the ground that it is the most appropriate considering the high volume of taxpayers visiting the Singosari Tax Office between March and April to report their Annual Corporate Income Tax Return.

Type and Sources of Research Data
The quantitative data used in this case included primary data and secondary data. Primary data derived from respondents' answers to questionnaire statement items which were then tabulated to obtain an overview of each research variable, namely tax education, tax supervision, tax compliance, and tax revenue. Secondary data in this study included data on realization of tax revenue, Organizational Performance Index, submission of Annual Tax Return, and geographical data of geographical data of the Singosari Tax Office work area.

Data Collection Method
The data collected represent respondents' perception toward the indicators of research variables. Therefore, the most appropriate method is disseminating the questionnaires directly to respondents chosen as the research samples. In this case, a Likert scale comprising score 1 to 5 was employed in the questionnaire. The questions contained in the questionnaire are close-ended.

Variable Operational Definition

The researcher used operational definition from the IKU manual published by the DJP in 2020 because they wanted to determine whether the synchronized links between the Singosari Tax Office's strategy map's variables for tax education, tax supervision, tax compliance, and tax revenue are adequate. The Operational Definitions of each variable studied are as follows:

Table 3. Operational Variables and Research Indicators

Research Variable	Definition	Research Indicator
Tax Education (X1)	Efforts and process of communicating information on taxation to bring forth changes in knowledge, skills and attitudes of people, business world, government and non-government officials, and institutions to develop understanding, awareness, attention, and contribution in fulfilling tax obligations have been based on the regulations applied.	1) Increased tax awareness 2) Improved tax knowledge 3) Better tax skills 4) Changes in Taxpayer behavior (register, pay and report)
Tax Supervision (X2)	Supervision supported by integrated information technology, quality data, and capable business processes, which can easily and quickly detect Taxpayer non-compliance (subjective or objective) to promote voluntary compliance.	1) Completion of requests for data and/or information 2) Delivery of Information, data, reports and complaints 3) Additional Taxpayers from extensification 4) Issuance of Tax Collection Letter
Tax Compliance (Z)	Effort in improving compliance with submission of Annual Tax Return and expansion of the tax payment base	1) Compliance with submission of Annual Tax Return for Income Tax for Corporate and Individual Taxpayers 2) PP 23 Taxpayers who make payments and/or utilize tax facilities borne by the government (*DTP*) 3) Growth in Non-PP 23 Taxpayers who make payments
Tax Revenue (Y)	Optimization of tax revenue in accordance with APBN or APBN-P targets	1) Realization of tax revenue 2) Tax revenue effort 3) Growth in gross tax revenue

Source: DJP (2020)

Data Analysis Method

Partial Least Square (PLS) was employed as the data analysis method. Haryono (2017) describes Partial Least Square (PLS) as an alternative method to Structural Equational Modeling (SEM to overcome specific problems in regression equation data. Similarly, Ghozali (2008) also states that PLS is an effective analytical technique since it is not predicated on many different factors.

4. Empirical Findings/Result

Data Input and Drawing the PLS Model

The researcher used SmartPLS 4.0 in processing and analyzing statistical data recapitulation of questionnaire results from respondents. Below is the research model path diagram:

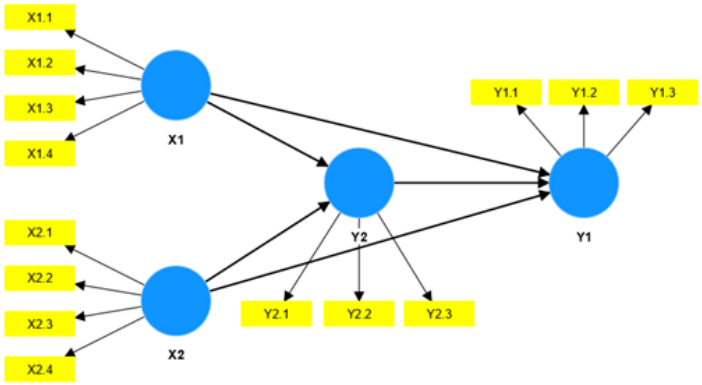

Figure 2. Research Model Path Diagram

Outer Model

The purpose of this test was to identify the connections between the latent variables and each indicator. The validity test and reliability test were the two tests made up the outer model testing.

A. Validity Test

The purpose of this test was to identify the connections between the latent variables and each indicator. The validity test and reliability test were the two tests made up the outer model testing.

1. Convergent Validity

Convergent validity is a condition where each construct can explain the variance of the items. It consisted of two steps, namely testing the factor loading value (outer loading) and testing the Average Variance Extracted (AVE) value.

a. Factor Loading Testing

According to Hair et al. (2019), factor loading measurement is the first step in the outer model in testing reflective constructs which involves examining indicator loadings. A factor loading value above 0.708 is recommended. Using SmartPLS 4.0, the factor loading value of each indicator is as follows:

Table 4. Results of Factor Loading Testing

Factor Loading	X1	X2	Y	Z
X1.1	0.879			
X1.2	0.887			
X1.3	0.811			
X1.4	0.643			
X2.1		0.918		
X2.2		0.892		
X2.3		0.882		
X2.4		0.649		
Y.1			0.863	
Y.2			0.874	
Y.3			0.897	
Z.1				0.925
Z.2				0.828
Z.3				0.888

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 4, of the 14 indicators examined, 12 indicators had a factor loading value above 0.708 for their variable. Therefore, the results indicate that 12 indicators have good convergent validity and can be kept in the path diagram. There were 2 indicators with a factor loading for their variable below 0.708, namely Changes in Behavior (X1.4) and Tax Collection Letter (X2.4). Because they did not meet convergent validity, both were removed from the measurement model.

b. AVE Testing

ccording to Hair et al. (2019), an acceptable AVE value in the measurement model is 0.50 or higher. Using SmartPLS 4.0, the AVE value of each variable is as follows:

Table 5. Results of Average Variance Extracted Testing

Variable	Average variance extracted (AVE)
X1	0,797
X2	0,835
Y	0,771
Z	0,777

Source: Data processing in SmartPLS 4.0 (2021)

As seen in the table 5, all variables have an AVE value above 0.5, indicating that the measurement model has good convergent validity.

2. Discriminant Validity

Latan and Ghozali (2015) expresses that a model has good discriminant validity if the correlation value of constructs that have a measurement item is greater than the correlation value with other constructs. Testing discriminant validity can be done with cross-loading testing, Fornell-Larcker testing and Heterotrait-Monotrait testing (HTMT).

a. Cross-Loading Testing

Based on the statistical calculation using SmartPLS 4.0, the cross-loading value on each indicator is as follows:

Table 6. Results of Cross-Loading Testing

Indicator	X1	X2	Y	Z
X1.1	**0,912**	0,549	0,632	0,469
X1.2	**0,911**	0,632	0,657	0,554
X1.3	**0,854**	0,500	0,516	0,503
X2.1	0,610	**0,931**	0,685	0,732
X2.2	0,572	**0,900**	0,675	0,658
X2.3	0,546	**0,911**	0,616	0,696
Y.1	0,617	0,730	**0,863**	0,666
Y.2	0,474	0,566	**0,874**	0,613
Y.3	0,680	0,587	**0,897**	0,532
Z.1	0,503	0,670	0,675	**0,924**
Z.2	0,449	0,672	0,490	**0,831**
Z.3	0,552	0,676	0,647	**0,888**

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 6, the cross-loading value of each indicator for each variable has a greater value than the cross-loading value of each indicator for non-variables. This shows that the measurement model is accepted and meets the discriminant validity of the cross-loading testing.

b. Fornell-Larcker Testing

The Fornell-Larcker test is a common testing procedure used to examine the correlation between constructs in a model with the square root value of average variance extracted (AVE) for each construct. According to Fornell and Larcker (1981), a model is considered to have excellent discriminant validity if the square root value of AVE for each construct is higher than the correlation value between the constructs. Based on the statistical calculation using SmartPLS 4.0, Fornell Larcker test results are as follows:

Table 7. Fornell-Larcker Test Results

Variable	X1	X2	Y	Z
X1	**0,893**			
X2	0,631	**0,914**		
Y	0,678	0,722	**0,878**	
Z	0,570	0,762	0,690	**0,882**

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 7, the square root value of AVE for each variable is greater than the correlation value between variables. This shows that the measurement model is acceptable and meets the discriminant validity of the Fornell-Larcker test.

c. HTMT Testing

Heterotrait-monotrait (HTMT) is defined as an average value of item correlation on all constructs relative to the (geometric) average of the mean correlation for items measuring the same construct (Hair et al., 2019). A construct is considered to have good discriminant validity if the HTMT value is below 0.90. Based on the statistical calculation using SmartPLS 4.0, HTMT test results are as follows:

Table 8. HTMT Test Results

Variable	X1	X2	Y	Z
X1				
X2	0,707			
Y	0,775	0,815		
Z	0,657	0,869	0,799	

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 8, the HTMT matrix value of each variable against other variables is all below 0.90. Based on the above testing, it can be said the measurement model is acceptable and meets the discriminant validity of the HTMT test.

B. Reliability Test

In studies using the PLS method, reliability testing consists of two stages, namely Composite Reliability and Cronbach's Alpha.

1. Composite Reliability

Composite Reliability is a test to measure the real reliability value of a construct. Hair et al. (2019) recommends that in reliability testing, the minimum value must be 0.70 and the maximum is 0.95. This shows that all constructs or latent variables in a study has a good reliability value. Using SmartPLS 4.0, the results of the Composite Reliability are as follows:

Table 9. Composite Reliability Test Results

Variable	Composite Reliability (rho_a)	Composite Reliability (rho_c)
X1	0,880	0,922
X2	0,903	0,938
Y	0,858	0,910
Z	0,863	0,913

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 9, the composite reliability value for each variable is above 0.70 and below 0.95. This shows that all constructs or latent variables in the study have a good reliability value.

2. Cronbach's Alpha

A reliability test called Cronbach's Alpha is used to validate the outcomes of Composite Reliability. If a variable's Cronbach's Alpha value is less than 0.6, it can

be deemed reliable (Hair et al., 2019). Using SmartPLS 4.0, the results of the Cronbach's Alpha test are as follows:

Table 10. Composite Reliability Test Results

Variable	Cronbach's Alpha
X1	0.872
X2	0.901
Y	0.852
Z	0.856

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 10, the Cronbach's Alpha for each variable is above 0.6. Variable X2 has the highest Cronbach's Alpha with 0.901, while Variable Y has the lowest with 0.852. This shows that all constructs or latent variables in the study have a good reliability value.

Inner Model

According to Sholihin and Ratmono (2013), structural model or inner model testing is a type of hypothesis testing used to determine the importance of the relationship between exogenous and endogenous variables. The following steps made up the testing:

A. Collinearity Testing

Collinearity testing must be carried out to ensure that the regression results are not biased. According to Hair et al. (2019), the structural model can be said to have no collinearity if the VIF value is less than 5. The following are the results of collinearity testing with a VIF table using SmartPLS 4.0:

Table 11. Results of Collinearity Testing with VIF Table

Indicator	VIF
X1.1	2,773
X1.2	2,604
X1.3	1,983
X2.1	3,277
X2.2	2,549
X2.3	2,889
Y.1	1,774
Y.2	2,380
Y.3	2,530
Z.1	2,937
Z.2	1,840
Z.3	2,385

Source: Data processing in SmartPLS 4.0 (2021)

As seen table 11, the VIF value of all research indicators is below 5. This shows that there is no collinearity problem in the structural model (inner model); thus, the structural model is acceptable.

B. Coefficient of Determination

The amount of variance in changes in exogenous variables toward endogenous variables is measured by the coefficient of determination (R2) value. The prediction model's performance against the research model is inversely correlated with R2 value. R2 has a value between 0 and 1; larger values suggest more explanatory power. As a general rule, R2 values of 0.75, 0.50, and 0.25, respectively, might be regarded as considerable, moderate, and weak (Henseler et al., 2009; Hair et al., 2011). Using SmartPLS 4.0, the results of coefficient of determination testing (R2) are as follows:

Table 12. Composite Reliability Test Results

Variable	*R-square*	*R-square adjusted*
Y	0,631	0,619
Z	0,593	0,585

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 12, the R-square value for variable Y and variable Z is more than 0 and less than 1. This shows the structural model is acceptable. The R-square value for variable Y was 0.631, above 0.50, below 0.75, indicating that variable Y has a moderate relationship with the exogenous variables that influence it, namely variable X1 and variable X2. Similarly, the R-square value for variable Z was 0.593, also above 0.50 and below 0.75, indicating that variable Z has a moderate relationship with the exogenous variables that influence it, namely variable X1 and variable X2.

C. Accuracy of Model Prediction

Calculating the Q2 value allows one to evaluate the model's accuracy in predicting the PLS route (Geisser, 1974; Stone, 1974). To reflect the predictive efficacy of the structural model for a given endogenous construct, the Q2 value for that construct should, as a general rule, be larger than zero. Q2 values greater than 0, 0.25, and 0.50, respectively, signify small, moderate, and substantial predictive importance of the PLS path model, respectively (Rigdon, 2014; Sarstedt et al., 2014). Using SmartPLS 4.0, the results of model prediction accuracy level test with Q2 are as follows:

Table 13. Results of Model Prediction Accuracy Level with Q2

Variable	Q^2predict
Y	0,572
Z	0,559

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 13, the Q2 value for variable Y and variable Z is greater than 0. This shows that variable Y and variable Z have a prediction accuracy level relevant to the structural model. The Q2 value on variable Y was 0.572, above 0.50, showing that variable Y has a strong prediction accuracy level against the exogenous variables that

influence it. Similarly, the Q2 value of variable Z was 0.559, also above 0.50, showing that variable Z has a strong prediction accuracy level against the exogenous variables that influence it.

Hypothesis Testing

The t-statistic and probability values in hypothesis testing show the connection between the variables. In this test, a connection is considered significant if the t-statistic value is less than 1.96 and the statistical value for alpha (p values) is less than 5% (0.05). As a result, when the t-statistic is greater than 1.96, the hypothesis is accepted and the alternative hypothesis is rejected. H_a is accepted if the p-value is less than 0.05 when considering probability to reject or accept a hypothesis. Hypothesis testing for the research model was performed through two steps, namely direct effect testing and indirect effect testing using SmartPLS 4.0 with the Bootstrapping method. In the subsamples menu, enter the number 5000 because that is the number recommended by the system, then in the confidence interval method menu select Bias-correlated and accelerated (BCa) Bootstrap. This method is used to determine the significance of the relationship between variables. Using SmartPLS 4.0 with the Bootstrapping method, the results of the direct effect testing of the research model are as follows:

Table 14. Direct Effect with the Bootstrapping Method

Variable Effects	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
X1→Y	0,331	0,324	0,101	3,284	0,001
X1→Z	0,149	0,146	0,111	1,339	0,181
X2→Y	0,312	0,313	0,125	2,500	0,012
X2→Z	0,668	0,676	0,106	6,302	0,000
Z→Y	0,264	0,269	0,106	2,489	0,013

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 14, the intervariable relationship X1→Y, X2→Y, X2→Z and Z→Y had a t-statistic value above 1.96 and p-values below 0.05, thus, X1→Y, X2→Y, X2→Z and Z→Y have a significant relationship, while X1→Z had a t-statistic value below 1.96 and p-values above 0.05, indicating that it has an insignificant relationship. Next is the indirect effect test. Using SmartPLS 4.0 with the Bootstrapping method, the results of the indirect effect testing of the research model are as follows:

Table 15. Indirect Effect with the Bootstrapping Method

Variable Effects	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
X1→Z→Y	0,039	0,043	0,039	1,011	0,312
X2→Z→Y	0,176	0,179	0,075	2,343	0,019

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 15, the intervariable relationship X1→Z→Y had a t-statistic value below 1.96 and p-values above 0.05; thus, the relationship between these three

variables is not significant. It can be concluded that there is no mediation from tax compliance (Z) for tax education (Z1) and tax revenue (Y). This is in line with Ghozali (2008), where if based on direct effect testing variable X1→Y has a significant effect, but based on indirect effect testing X1→Z→Y has an insignificant effect, then variable Z cannot mediate variable X1 and variable Y.

Furthermore, the intervariable relationship X2→Z→Y had a t-statistic value above 1.96 and p-values above 0.05; thus, the relationship between these three variables is significant. It can be concluded that there is a partial mediation from tax compliance (Z) on taxpayer supervision (X2) and tax revenue (Y). This is in line with Ghozali (2008), where if based on direct effect testing variable X2→Y has a significant effect, but based on indirect effect testing X2→Z→Y also has a significant effect, then variable Z partially mediates variable X2 and variable Y

5. Discussion

Hypothesis testing as a conceptual framework is summarized in the following table:

Table 16. Summary of Hypothesis Testing Results

Hypothesis	Variable Relationships	Path Coefficient	t statistic	*P values*	Conclusion
H_1	X1→ Z	0,149	1,339	0,181	rejected
H_2	X2→ Z	0,668	6,302	0,000	accepted
H_3	Z → Y	0,264	2,489	0,013	accepted
H_4	X1 → Y	0,331	3,284	0,001	accepted
H_5	X2 → Y	0,312	2,500	0,012	accepted
H_6	X1 → Z→Y	0,039	1,011	0,312	rejected
H_7	X2 → Z→Y	0,176	2,343	0,019	accepted

Source: Data processing in SmartPLS 4.0 (2021)

As seen in table 16, it can be seen that of the seven hypotheses that were tested, there were two hypotheses that were rejected, namely H_1 and H_6. The H_1 test shows that tax education (X1) has no significant effect on Tax compliance (Z), this is supported by the research results of Damanik (2018), who examined taxpayers in the Asahan Regency area, the results of his research showed that tax education did not have a significant effect on tax compliance. The H_6 test shows that tax education (X1) has no significant effect on tax revenue (Y) through Taxpayer compliance (Z) so it can be concluded that there is no mediation of Taxpayer compliance (Z) with tax education (X1) and tax revenue (Y), different results were presented by Sari et al. (2020), who conducted research entitled The Effect of Tax Education on the Tax Revenue with Tax Compliance as an Intervening Variable, the results of their research show that tax education has a positive effect on the tax revenue through tax compliance. There are five accepted hypotheses, namely H_2, H_3, H_4, H_5 and H_7, so the conceptual framework for the results of the hypothesis testing carried out is as follows:

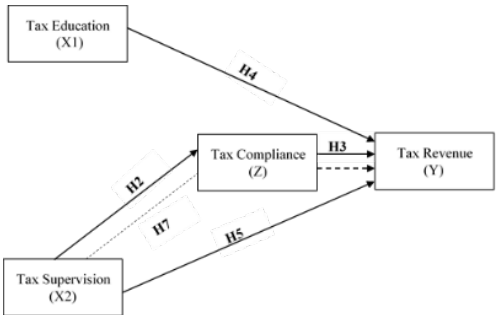

Figure 3. Conceptual Model of Test Results

In figure 3, information is obtained that the tax revenue (Y) is influenced by three variables, namely tax education (X1), tax supervision (X2) and tax compliance (Z). The tax compliance (Z) is influenced by the tax supervision (X2) and becomes an intervening (mediation) variable between the tax supervision (X2) and the tax revenue (Y). Of the three variables, the tax education (X1) has the greatest influence on the tax revenue (Y), this can be seen from the results of the direct effects test in table 16, the table shows that X1 → Y has the highest value path coefficient is 0.331. These path coefficients mean that if tax education (X1) increases by one unit, tax revenue (Y) can increase by 33.1%.

6. Conclusions

Based on our results and data analysis, the following conclusions are presented:

a. Tax education has no positive and significant effect on tax compliance;
b. Tax supervision has a positive and significant effect on tax compliance;
c. Tax compliance has a positive and significant effect on tax revenue;
d. Tax education has a positive and significant effect on tax revenue directly;
e. Tax supervision has a positive and significant effect on tax revenue directly;
f. Tax education has no significant effect on tax revenue through tax compliance. This is because tax education does not significantly affect tax compliance even though tax education has a significant effect on tax revenue. Thus, it can be said that tax compliance does not mediate between tax education and tax revenue; and
g. Tax supervision has a significant but partial effect on tax revenue through tax compliance. This is because tax supervision significantly affects tax revenue directly, thus, with or without tax compliance, tax supervision remains significantly influential to tax revenue at the Singosari Tax Office. It can be said that tax supervision partially mediates tax supervision and tax revenue.

Based on the research results that have been described and conditions in the field, the researcher offers several suggestions, namely:

1. For the Directorate General of Taxes (DJP), especially the Singosari Tax Office, it is advised to improve the quantity and quality of tax education activities and to properly carry out tax education management. The Directorate General of Taxes should carry out a tiered evaluation in relation to tax education activities carried out by each tax office so that tax education activities can run effectively and on

target to improve overall tax compliance. In relation to tax supervision activity, greater focus should be given to improving quality, not increasing quantity. The quality of supervision can be improved with quality data; the data entered in the monitoring application menu should be data of high quality to generate better monitoring results. The quality of supervision can be improved by giving rewards to Account Representatives. If necessary, Account Representative are given a bonus if they can bring in a certain amount of tax revenue.

2. For future researchers, it is recommended to employ more varied variables related to tax revenue because there are many other factors that influence tax revenue, such as tax collection, tax audits, tax inspection, tax extensification, service quality, optimal tax data, and competent human resources. Taxes are dynamic, always changing following developments in the world economy, as are tax regulations and tax administration. Therefore, future research should adapt to the latest tax regulations and tax administration.

References:

Amilin. (2016). The Effects of Tax Education and Services Fiscus on Corporate Tax Revenue. *Journal of Accounting Volume XX N0. 02*, 285-300.

Aondo, R. M. (2019). Effectiveness of Taxpayer Education on Tax Compliance for Small and Medium Enterprises in Kenya: A Study of Selected Business Enterprises in Kitengela Town in Kajiado Country. *International Journal of Management & Entrepreneurship Research 1(3)*, 114-123.

Astuti, A., & Panjaitan, I. (2017). The Effects of E-Invoicing and Tax Education on Tax Revenue Through Tax Compliance as Moderating Variables in Sunter Tax Office, North Jakarta. *Accounting Media Taxation, 2(1)*, 1-13.

Damanik, D. (2018). Analysis The Effects of Tax Education, Application Electronics and Tax Audit on Tax Compliance in the Regency Asahan. *Journal Scientific Research Science, 4(1)*, 15-28.

Deli, L., & Murtani, A. (2019). The Effects of Quality Service and Tax Supervision on Tax Compliance with Competence as Moderating Variables in Service Offices Medan Polonia Tax Office, Medan City. *Journal Research Accounting and Business, 19(2)*, 229-240.

DJP. (2020). *Revision Key Performance Indicators (KPI) of Vertical Units in the Environment Directorate General Taxes per second quarter of 2020.* Jakarta: Directorate General Taxes.

Finance, M. o. (2021, February 8). *Accelerated 2021 APBN information Recovery Economy and Strengthening Reform.* Retrieved from Information of APBN 2021: from https://media.kemenkeu.go.id/getmedia/b5715b29-76d8-4357-8cd6-9ce98209c4f3/information-apbn-2021.pdf

Fornell, C. G., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, Vol. 18 No. 1*, 39-50.

Geisser, S. (1974). A predictive approach to the random effects model. *Biometrika, Vol. 61 No. 1*, 101-107.

Ghozali, I. (2008). *Structural Equation Modeling, Edition II.* Semarang: Diponegoro University.

Ghozali, I., & Latan, H. (2015). *Concepts, Techniques, Applications Using Smart PLS 3.0 For Study Empirical.* Semarang: BP Undip.

Guitaru, K. (2017). The Effects of Tax Education on Tax Compliance in Kenya (a case study of MSME's in Nairobi Central Business District. *Munich Personal RePEc Archive*, 80344.

Hair, J., Ringle, C., & Sarstedt, M. (2011). PLS-SEM: As a silver bullet. *Journal of Marketing Theory and Practice, Vol. 19 No. 2*, 139-151.

Hair, J., Ringle, C., & Sarstedt, M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review. Vol. 31 No. 1*, 2-24.

Haryono, S. (2017). *SEM method for study Management, AMOS, LISREL PLS.* Jakarta: PT Luxima Metro Media.

Henseler, J. R. (2019). The use of partial least squares path modeling in international marketing, in Sinkovics, RR and Ghauri, PN (Eds) Advances in International Marketing. *Emerald Bingley*, 277-320.

IMF. (2021, February 6). *International Monetary Fund.* Retrieved from World Economic Outlook Update, January 2021: https://www.imf.org/en/Publications/WEO/weo-database/2020/October

Kastolani, O., & Ardiyanto, M. (2017). The Effects of Tax Compliance and Tax Audit on Tax Revenue. *Diponegoro Journal of Accounting, 6(3)*, 1-10.

Kwok, B., & Yip, R. (2018). Is Tax Education Good or Evil for Boosting Tax Compliance? Evidence from Hong Kong. *Asian Economic Journal 32(4)*, 359-386.

Manurung, S., & Banjarnahor, H. (2020). The Effects of Tax Audit, Billing Tax and Tax Compliance on Tax Revenue in Batam City. *Scientia Journal, 2(3)*, 38-46.

Putriani, I. A., & Budiartha, I. (2016). The Effects of Tax Education and Services Fiscus on Corporate Tax Revenue. *E- Journal Udayana University Accounting, 14(1)*, 79-90.

Rakhmadani, V. (2020). The Effects of Tax Compliance and Billing Tax on Tax Revenue (Study Case at the Directorate Head Office General Tax). *Econam: Journal Economics, 2(1)*, 12-18.

Rigdon, E. (2014). Rethinking partial least squares path modeling: breaking chains and forging ahead. *Long Range Planning, Vol. 47 No. 3*, 161-167.

Sari, H., Makaryanawati, & Edwy, F. (2020). The Effects of Tax Education on Tax Revenue Through Tax Compliance as Intervening Variables. *Research and Journal Accounting, 4(2)*, 603-615.

Sarstedt, M., Ringle, C., Henseler, J., & Hair, J. (2014). On the emancipation of PLS-SEM: a commentary on Rigdon (2012). *Long Range Planning, Vol. 47 No. 3*, 154-160.

Sekaran, U. (2000). *Research Methods for business: A Skill Building Approach.* Singapore: John Wiley & Sons, Inc.

Sholihin, M., & Ratmono, D. (2013). *SEM-PLS analysis with SMARTPLS 3.0.* Yogyakarta: ANDI Publishers.

Singgih, S., & Tjiptono. (2001). *Research Marketing Concepts and Applications with SPSS.* Jakarta: Elex Media Komputindo.

Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society, Vol. 36 No. 2*, 111-147.

Subhan, & Susanto, E. (2020). The Effects of Tax Education and Tax Supervision by Account Representative on Tax Revenue at South Makassar Tax Office. *Amnesty: Journal Research Taxation, 3(1)*, 65-72.

Sugiyono. (2011). *Method Study Quantitative, Qualitative and R&D.* Bandung: Afabeta.

Waluyo. (2016). The Effects of Addition of Taxpayers Number, Tax Audit, Tax Billing and Taxpayers Compliance toward Tax Revenue. *The Accounting Journal of Binaniaga, 1(1)*, 37-44.

Yudistira, A. M. (2020). *The Effects of Tax Education and Sanctions Taxation on Tax Compliance: Perception MSME actors in Makassar City.* Makassar: Study Program Accounting, Faculty of Economics, Makassar State University.