

Linking Cognitive, Moral, and Motivational Factors to Tax Compliance: An MSME Study Based on Self-Determination Theory and the Extended Theory of Planned Behavior

Fajriani Azis*, Sitti Hasbiah, M. Azwar Haslip, Andi Anggi Kemalasari, Andika Isma, & Hajar Dewantara

Universitas Negeri Makassar, Makassar, 90222, Indonesia

Abstract

MSME tax compliance plays a strategic role in increasing state revenue, but the low level of compliance requires effective strategies based on internal and external factors of taxpayers. Previous studies tend to focus on sanctions or economic incentives and rarely integrate psychological factors from the Extended Theory of Planned Behavior with motivational factors from Self-Determination Theory to explain MSME tax compliance behavior. This study aims to develop an integrative model that examines the influence of Tax Knowledge, Tax Morale, Tax Fairness and Equity, and Tax Regulations on Tax Compliance through the mediation of Independence, Competence, and Tax Compliance Intention. Using a quantitative cross-sectional design approach to 534 MSME respondents and prospective entrepreneurs in Indonesia and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), the results show that all ETPB constructs have a significant effect on independence and competence, which in turn increases tax compliance intention and has a strong impact on actual compliance. Mediation analysis shows the existence of a multi-layered influence pathway from cognitive factors to compliance behavior through psychological capacity and intention, thus emphasizing the need for multi-layered policy interventions ranging from tax education, internalization of moral values, increasing perceptions of fairness, regulatory clarity, to empowering the independence and competence of MSMEs to build commitment to sustainable tax compliance.

Keywords: Extended Theory of Planned Behavior, Self-Determination Theory, Tax Compliance Intention, Tax Compliance, MSME

Received: 22 March 2026

Revised: 2 June 2026

Published: 30 June 2026

1. Introduction

Tax compliance is a fundamental pillar in maintaining fiscal stability and the sustainability of national economic development.(Chen, 2024).In Indonesia, the micro, small, and medium enterprise (MSME) sector plays a role as the backbone of the economy, contributing more than 62% to Gross Domestic Product (GDP) and absorbing more than 97% of the national workforce.(Directorate General of Taxes, 2024).However, the level of tax compliance in this sector remains relatively low, indicating a gap between the economic potential of MSMEs and their contribution to state revenue. Therefore, understanding the determinants of MSME tax compliance is crucial, not only from a fiscal perspective but also from the perspective of taxpayer behavior and motivation in an increasingly complex and digital tax system.

Based on this urgency, various previous studies have examined the factors influencing MSME tax compliance through various economic, cognitive, and social approaches. Early studies highlighted economic factors such as tax rates, compliance costs, and the effectiveness of sanctions as key determinants of taxpayer behavior.(Maseko, 2014; Sia, 2008).As the behavioral perspective developed, the Theory of Planned Behavior (TPB) was then used to explain how cognitive and social factors such as tax knowledge, perceptions of fairness, and social norms influence compliance intentions.(Amireh & Ahmad, 2022; Taing & Chang, 2020)However, various empirical findings show inconsistent results, especially in the context of MSMEs which have unique characteristics such as limited resources and different motivations compared to large companies.(Fuadi & Mangoting, 2013; Rachmawati & Ramayanti, 2022).This

* Corresponding author.

E-mail address: fajrianiazis@unm.ac.id

inconsistency indicates that cognitive-based models such as the TPB are not yet fully capable of explaining compliance behavior as a whole.

In response to these limitations, a number of studies have begun shifting their analytical focus from a rational economic approach to a psychological approach that emphasizes motivational aspects. In this context, Self-Determination Theory (SDT) offers a more in-depth conceptual framework for understanding tax compliance as a result of intrinsic motivation, rather than solely external pressure. SDT explains that voluntary behavior is driven by the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. (Balaskas et al., 2024; Ryan & Deci, 2020) In taxation, intrinsic motivation arises when taxpayers feel in control of their actions, understand the importance of their tax contributions, and feel morally connected to broader social goals. (Dauna, 2023). Therefore, SDT provides a basis for explaining tax compliance that stems from awareness and responsibility, not merely forced compliance.

Thus, there appears to be an opportunity for integration between the psychological approach offered by the Extended Theory of Planned Behavior (ETPB) and the motivational approach of Self-Determination Theory (SDT). ETPB-based studies emphasize the importance of psychological beliefs such as perceptions of fairness, morality, and understanding of tax regulations. (Amireh & Ahmad, 2022; Taing & Chang, 2020), but have not considered how motivational factors can strengthen the relationship between compliance intentions and behavior. In contrast, SDT research highlights the importance of intrinsic motivation and psychological needs, but has not comprehensively explained the mechanisms for forming compliance intentions in the context of tax behavior. (Balaskas et al., 2024; Ryan & Deci, 2020) This condition indicates a relevant theoretical gap that needs to be bridged to achieve a more holistic understanding of tax compliance.

Based on these conceptual gaps, this study proposes an integrative model combining ETPB and SDT to explain tax compliance among MSMEs in Indonesia. This model positions psychological factors (tax knowledge, fairness, morality, and regulations) as initial determinants that influence motivational factors (independence and competence), which ultimately shape tax compliance intentions and behavior. This approach allows for a more in-depth analysis of how external and internal factors interact to influence tax compliance. Theoretically, this study contributes to the literature by broadening our understanding of the integration between psychological behavioral models and intrinsic motivation. Practically, the results are expected to serve as a basis for formulating more humanistic, participatory, and sustainable tax policies for the MSME sector in Indonesia.

2. Literature Review

This study integrates the Extended Theory of Planned Behavior (ETPB) and Self-Determination Theory (SDT) to explain the tax compliance intentions and behavior of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. The integration of these two theories provides a more comprehensive conceptual framework, as it not only explains tax compliance from a cognitive and normative perspective but also emphasizes the motivational dimension that drives individuals to voluntarily comply.

2.1. Extended Theory of Planned Behavior (ETPB)

The Extended Theory of Planned Behavior (ETPB) is a development of the Theory of Planned Behavior (TPB) put forward by Ajzen, (1991) by adding contextual constructs to strengthen the model's predictive ability regarding actual behavior. This theory emphasizes that behavioral intentions are influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control, which together determine a person's propensity to act. In the context of taxation, this expansion includes the variables of tax knowledge, tax morale, perceptions of fairness and equity, and tax regulations. (Bellová et al., 1985; Fadhilatunisa et al., 2024; Teo, 2010).

These four constructs reflect the cognitive, normative, and regulatory dimensions of tax compliance behavior. Tax knowledge reflects taxpayers' understanding of their rights, obligations, and tax procedures; tax morale reflects the internalization of ethical values in fulfilling tax obligations; tax fairness and equity reflect perceptions of the equality of tax burdens and the distribution of tax benefits; while tax regulations emphasize clarity of rules and ease of system implementation. Within the ETPB framework, these variables act as determinants of tax compliance intentions, both directly and through indirect influences on actual behavior. For MSMEs, these four factors are highly relevant because they operate in a context of limited resources and often face uncertainty in fiscal regulations. Therefore, the integration of ETPB allows for a more comprehensive understanding of the factors shaping tax compliance.

H1: Tax Knowledge has a positive effect on Competence

H2: Tax Morale has a positive effect on Independence

H3: Tax Justice and Equity have a positive effect on independence

H4: Tax regulations have a positive effect on competence.

2.2. Self-Determination Theory (SDT)

Self-Determination Theory (SDT) is a motivation theory developed by Deci & Ryan (1985) provides a motivational framework that explains why individuals choose to act voluntarily. SDT focuses on the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. When these needs are met, individuals tend to have strong intrinsic motivation to act with commitment and responsibility. (Guo, 2023; Loverre et al., 2024; Schoon & Léon, 2021).

In the context of taxation, SDT explains that independence and competence play a major role in shaping tax compliance intentions (Iphan et al., 2025; Jayawardane, 2015; Hendra Apriwanto, 2024). Taxpayers who feel they have the freedom to manage their tax obligations (autonomous motivation) and are confident in their ability to understand the tax system (competence belief) are more likely to demonstrate voluntary and sustainable compliance. Furthermore, a supportive social environment, such as transparent communication between taxpayers and tax authorities, can strengthen the positive relationship between internal motivation and compliance behavior. (Hermanto et al., 2022; Stam & Verbeeten, 2017).

H5: Independence has a positive effect on Tax Compliance Intention

H6: Competence Has a Positive Influence on Tax Compliance Intention

H7: Competence strengthens the relationship between tax knowledge and intention to comply with taxes.

H8: Independence increases the relationship between tax morale and tax compliance intention.

H9: Independence positively mediates the relationship between tax fairness and equity with tax compliance intentions.

H10: Competence mediates the positive relationship between tax regulations and tax compliance intentions.

2.3. Tax Compliance Intention

Tax compliance intention refers to an individual's internal tendency to voluntarily fulfill future tax obligations. Based on the Theory of Planned Behavior (Ajzen, 1991) Intention serves as a primary predictor of actual behavior. In the context of taxation, this intention reflects a taxpayer's readiness to report, calculate, and pay taxes in accordance with applicable regulations. Several studies have shown that compliance intention is influenced by cognitive (tax knowledge), normative (morality and tax fairness), and psychological (independence and competence) factors. (Herman et al., 2023; Sya'ban, 2024; Ustman & Wahyuni, 2023) In the context of MSMEs, tax compliance intentions are determined not only by an understanding of the rules but also by intrinsic motivation that develops through self-confidence and freedom in managing fiscal responsibilities. This understanding underscores the importance of policy strategies that are not solely coercive but also support the development of internal motivation and voluntary commitment from business actors.

2.4. Integrative Conceptual Model

Overall, the integration of ETPB and SDT illustrates the hierarchical relationship between cognitive, psychological, and behavioral factors. Cognitive and normative factors (knowledge, morality, fairness, and regulation) influence psychological factors (independence and competence), which in turn shape tax compliance intentions and result in actual compliance behavior. Thus, this model confirms that improving tax compliance depends not only on external interventions but also on strengthening taxpayers' internal capacity and motivation. Figure 1 below illustrates the proposed research model, which integrates ETPB and SDT to explain the dynamics of the formation of tax compliance intentions and behavior among MSMEs in Indonesia.

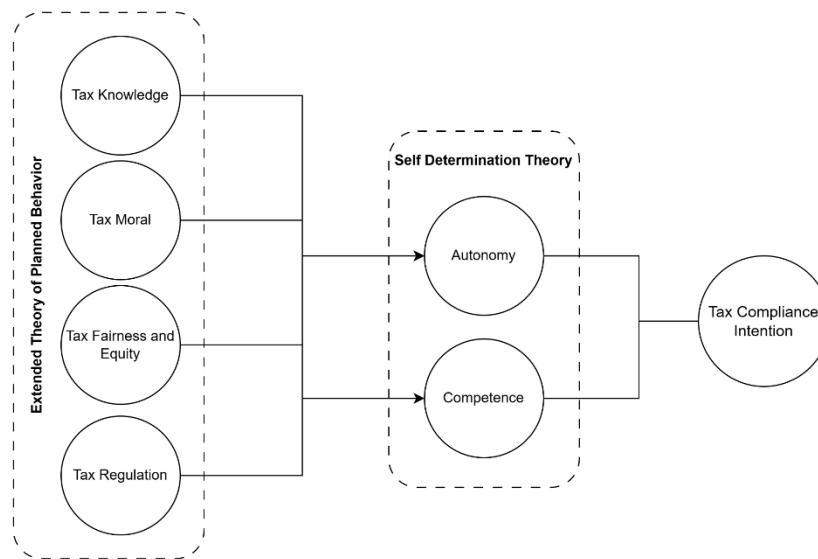


Figure 1. The suggested research model

3. Methods

3.1. Research Approach and Participants

This study uses a quantitative approach with a cross-sectional design to investigate the relationship between independence, competence, and tax experience on tax awareness and compliance among Micro, Small, and Medium Enterprises (MSMEs). (Cowell, 2020; Cresswell, 2017). This approach was chosen because it allows data collection from respondents at a single point in time.

The sample size for this study was 534 participants, collected using a purposive sampling technique. The primary criteria were active Micro, Small, and Medium Enterprises (MSMEs), students with businesses, and the general public who had participated in tax training or counseling.

3.2. Data collection and instruments

Data collection in this study was conducted online using the Google Forms platform, distributed through various digital media platforms such as WhatsApp, Instagram, Facebook, and email. The questionnaire was distributed online through the Google Forms platform from June to July 2025. Participants provided informed consent before completing the questionnaire.

To ensure sufficient sample size for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis, the 10-fold rule was used. (Henseler et al., 2015) Because this instrument consists of 28 measurement items, the minimum number of respondents required is 280. In practice, 534 respondents met the criteria and completed the questionnaire.

3.3. Instrument

This research questionnaire consists of two main parts. The first part contains data on respondent characteristics including gender, age, status as a student or MSME entrepreneur, length of business, type and scale of business, NPWP ownership, experience attending tax training, and frequency of tax reporting or payment. The second part contains a questionnaire developed based on the theoretical framework of the Extended Theory of Planned Behavior and Self-Determination Theory. There are eight main constructs in this model, namely: (1) Tax Knowledge (TK), (2) Tax Morale (TM), (3) Tax Justice and Equity (TFE), (4) Tax Regulation (TR), (5) Independence (KEM), (6) Competence (KOM), (7) Tax Payment Intention (TCI), and (8) Tax Compliance (TC). The research team developed the questionnaire after reviewing relevant studies with theories such as the Extended Theory of Planned Behavior and Self-Determination

Theory, which examine factors such as knowledge, morality, regulations, tax fairness, independence, competence, and tax compliance intentions and behavior among MSMEs.

3.4. Data Analysis

For data analysis, this study uses the Partial Least Squares Structural Equation Modeling (PLS-SEM) method, although there is still debate regarding its effectiveness in various disciplines. (Bentler & Huang, 2014; JF Hair et al., 2019; Henseler et al., 2015; Sarstedt et al., 2021). The selection of PLS-SEM was based on recommendations from Florido-Benítez, (2023) because this method is suitable for assessing the proposed theoretical framework, handling model complexity, and accommodating composite and latent variables measured by observational indicators. (Cepeda-Carrion et al., 2019; JF Hair et al., 2019).

The analysis was conducted in three main stages. First, common method bias testing was performed using Harman's single-factor test and the Variance Inflation Factor (VIF) test to ensure the absence of collinearity issues, with all VIF values below the recommended threshold of 3.3. (Miles, 2005; Vörösmarty & Dobos, 2020). Second, the evaluation of the measurement model was conducted to assess the validity and reliability of the construct, including testing factor loadings, convergent validity using the Average Variance Extracted (AVE) value, discriminant validity using the Fornell-Larcker criteria, and internal reliability using the Cronbach's Alpha and Composite Reliability (CR) values. (Fornell & Larcker, 1981) Third, structural model testing was conducted to assess the relationships between constructs, including analysis of R^2 values for predictive power, f^2 for effect size, Q^2 for predictive relevance, and testing the significance of direct and indirect paths using bootstrapping with 5,000 subsamples and a significance level of 5%. (JF Hair et al., 2021).

4. Result and Discussion

4.1. Results

The PLS-SEM model was assessed through a two-step process. In the first step, the measurement model was tested to confirm its reliability and validity. In the second step, the structural model was tested by analyzing direct and indirect path coefficients, regression results, and several quality criteria to verify the robustness and consistency of the findings.

4.1.1. Demographics

Demographic analysis was conducted to comprehensively describe the respondents' profiles, encompassing basic variables such as gender, age group, entrepreneurial status, length of business and type, business scale, and tax compliance aspects. Information also included ownership of a Taxpayer Identification Number (NPWP), participation in tax training or counseling, and frequency of tax reporting or payment. The tabular presentation facilitates a systematic understanding of the distribution of respondents and serves as a basis for analyzing the relationship between demographic characteristics and research variables (Table 1).

Based on the distribution of respondent characteristics in the table, the majority were female (68.5%) and aged 20-25 years (52.81%). Most were MSMEs (49.06%), followed by aspiring entrepreneurs who did not yet have a business (38.58%). In terms of experience, 45.89% of respondents did not yet have a business, while 42.88% had been running a business for less than three years. The dominant types of businesses were culinary (16.30%), digital services (16.30%), and handicrafts (9.18%), with the majority of businesses falling into the micro category (49.44%). Ownership of a Taxpayer Identification Number (NPWP) was still limited to 44.57% of respondents, in line with the high proportion who did not yet have a business. Participation in tax training or counseling was relatively high, especially online (64.98%), although 11.24% had never attended. The frequency of tax reporting or payment varied, with 41.01% reporting regularly every period, while 45.13% stated it was irrelevant because they did not yet have a business. These findings provide initial insight into the relationship between demographic profile, entrepreneurial status, and tax compliance levels, which will be further analyzed in the next section.

4.1.2. Common Method Bias

To confirm the absence of common method bias (CMB), which could potentially impact the validity of the research results, a collinearity test was conducted using the Variance Inflation Factor (VIF) value. According to Hair et al. (2021), a VIF value exceeding 3.3 indicates potential common method bias, while a value below this threshold indicates the

model is free from this problem. This test was performed on all paths in the structural model to identify potential redundancy between constructs.

Table 1. Respondent Characteristics

Baseline Characteristic	Full sample	
	n	%
Gender		
Female	366	68.5
Male	168	31.46
Age		
<20 Years	48	8.99
20 – 25 Years	282	52.81
26–30 Years	116	21.73
>30 Years	88	16.48
Respondent Status		
Entrepreneurship Study Program Students	38	7.12
Active Students with Business Ownership	28	5.24
Students who do not yet have a business but are interested in becoming entrepreneurs (aspiring entrepreneurs)	206	38.58
Micro, Small, and Medium Enterprises (MSMEs)	262	49.06
Length of Business Ownership		
< 1 Year	102	19.1
1–3 Years	127	23.78
4–6 Years	40	7.49
> 6 Years	20	3.74
Don't have a business yet	245	45.89
Type of business run		
Culinary	87	16.3
Fashion	42	7.87
Crafts	49	9.18
Digital services (design, content, etc.)	87	16.3
Other: _____	24	4.49
Don't have a business yet	245	45.89
Business Scale		
Micro (assets ≤ IDR 50 million, turnover ≤ IDR 300 million/year)	264	49.44
Small (assets > IDR 50 million – IDR 500 million, turnover > IDR 300 million – IDR 2.5 billion/year)	25	4.68
Medium (assets > IDR 500 million – IDR 10 billion, turnover > IDR 2.5 billion – IDR 50 billion/year)	0	0
Not yet a business	245	45.89
Do you have a Taxpayer Identification Number (NPWP)?		
Yes	238	44.57
No	296	55.43
Have you ever participated in tax training or outreach?		
Yes, in person (offline)	127	23.78
Yes, online	347	64.98
Never	60	11.24
How often do you report or pay taxes?		
Regularly every period	219	41.01
Sometimes	18	3.37
Never	14	2.62
Don't know how	42	7.87
Not yet relevant (not yet a business)	241	45.13

Note: Total= 534

Table 2. Full Collinearity VIF Values

Path	VIF
KEM -> TCI	1.935
KOM -> TCI	1.935
TCI -> TC	1.000
TFE -> KEM	2.426
TKNOW -> KOM	2.555
TM -> KEM	2.426
TR -> KOM	2.555

Based on Table 2, all VIF values ranged from 1.000 to 2.555, which is well below the critical threshold of 3.3. This indicates that there is no significant indication of common method bias in the model. Therefore, collinearity between constructs is not a problem, and the parameter estimates can be interpreted validly. These results also confirm that the research instrument has an adequate level of discrimination between constructs, thus supporting the validity of the proposed structural model.

4.1.3. Assessment of Measurement Models

Evaluation of the measurement model is an important step in PLS-SEM because it serves as a basis for ensuring construct validity and reliability before testing the structural model which includes four main aspects: factor loadings, convergent validity, discriminant validity, and internal consistency reliability. (JF Hair et al., 2019). This study uses the PLS algorithm in SmartPLS 4.1.0.3 with reflective estimation (Mode A), while the formative constructs are assessed using loading weights. (Ketchen, 2013). Loading value above 0.5, according to (JF Hair et al., 2019) indicates that the construct is able to explain at least 50% of the variance in the measured indicators.

The measurement model evaluation process was carried out by eliminating reflective indicators that had loading values below 0.5, because their contribution was deemed inadequate in representing the construct (Figure 2). Based on the results of the outer loading analysis, the indicators that were eliminated included TM5 in the Time Management (TM) construct, TFE3 in the Tax Fairness and Equality (TFE) construct, TR3 and TR5 in the Tax Regulation (TR) construct, TKNOW1 in the Tax Knowledge (TKNOW) construct, KEM2 and KEM4 in the Independence (KEM) construct, TCI4 in the Tax Compliance Intention (TCI) construct, KOM4 in the Competence (KOM) construct, and TC2 in the Tax Compliance (TC) construct. Despite the deletions, each construct retained a minimum of three indicators that met the measurement validity criteria, as recommended by (Hair et al., 2010). This step ensures that the measurement model has relevant, valid, and reliable indicators, so that it can be used appropriately in subsequent structural model testing.

In addition to visualizing the indicator-construct relationship on Table 3, the reliability and validity of the measurement model were evaluated by calculating Cronbach's Alpha, Rho_A, Composite Reliability (CR), and Average Variance Extracted (AVE) for each construct. Cronbach's Alpha, Rho_A, and CR were used to test internal consistency, while AVE was used to measure convergent validity. Cronbach's Alpha, Rho_A, and CR values above 0.70 indicate good reliability, while AVE values above 0.50 indicate that the construct is able to explain more than half of the variance in its indicators. (Hair et al., 2019).

Based on the results of the outer model test on Table 3, all indicators have outer loading values between 0.749 and 0.840, which means they have exceeded the minimum threshold of 0.70. This indicates that each indicator is able to represent the construct it measures well. Furthermore, Cronbach's Alpha values range from 0.734 to 0.829, Rho_A between 0.741 to 0.865, and Composite Reliability (CR) between 0.848 to 0.886. All of these values exceed the threshold of 0.70, confirming that all constructs have good internal consistency. In addition, the Average Variance Extracted (AVE) values range from 0.617 to 0.669, exceeding the minimum threshold of 0.50, so it can be concluded that each construct meets convergent validity. These findings overall indicate that all constructs in the model have valid and reliable indicators, making it worthy to proceed to the structural model analysis stage.

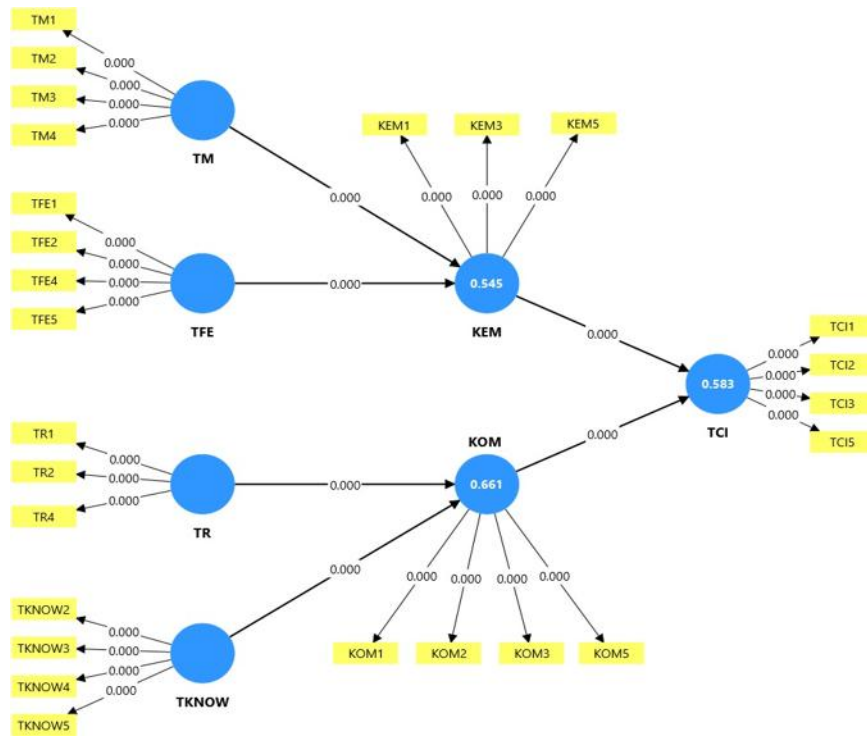


Figure 2. Complete measurement of the proposed model using the consistent PLS algorithm.

Table 3. Loading, reliability, and validity indicators for first-order constructs

Item code	Item Description (Constructs)	Loading	Alpha	Rho_A	CR	AVE
Tax Moral			0.793	0.795	0.865	0.617
TM1	I feel guilty if I don't pay my taxes on time.	0.761				
TM2	I view paying taxes as a moral responsibility.	0.797				
TM3	I will still pay my taxes even if government oversight is lax.	0.790				
TM4	I feel dishonest if I hide income from my tax return.	0.793				
Tax Fairness and Equity			0.827	0.828	0.885	0.658
TFE1	I feel the current tax system treats MSMEs fairly.	0.797				
TFE2	The government charges taxes based on my business's capabilities.	0.824				
TFE3	I feel I'm not being discriminated against in my tax obligations.	0.798				
TFE4	I believe the tax system adheres to the principles of social and economic justice.	0.826				
Tax Regulation			0.752	0.753	0.858	0.669
TR1	I understand the tax regulations that apply to my current business.	0.823				
TR2	Existing tax regulations are easily accessible and understandable for MSMEs.	0.833				

Item code	Item Description (Constructs)	Loading	Alpha	Rho_A	CR	AVE
TR3	I feel that current tax regulations are not fully in favor of MSMEs.	0.798				
	Tax Knowledge		0.810	0.814	0.875	0.636
TKNOW1	I understand the procedures for calculating and reporting taxes.	0.819				
TKNOW2	I understand my rights and obligations as an MSME taxpayer.	0.807				
TKNOW3	I understand the deadlines for reporting and paying taxes.	0.797				
TKNOW4	I understand the legal consequences of tax non-compliance.	0.767				
	Independence		0.734	0.741	0.848	0.651
KEM1	I can manage the entire tax process without relying on outside parties.	0.831				
KEM2	I feel capable of understanding and applying the applicable tax regulations.	0.806				
KEM3	I feel motivated to comply with taxes as a form of business independence.	0.784				
	Competence		0.829	0.829	0.886	0.661
KOM1	I understand the types and rates of taxes imposed on my business.	0.810				
KOM2	I know the procedures for electronic tax reporting and payment.	0.819				
KOM4	I am able to prepare simple financial reports for tax purposes.	0.817				
KOM5	I have administrative skills to manage tax documents.	0.807				
	Tax Compliance Intention		0.804	0.809	0.872	0.630
TCI1	I intend to file my taxes regularly going forward.	0.792				
TCI2	I have a strong desire to fulfill my tax obligations each period.	0.749				
TCI3	I will pay closer attention to my business's tax compliance from now on.	0.830				
TCI4	I am committed to complying with all tax regulations.	0.803				

Note: Autonomy (KEM), Competence (KOM), Tax Compliance Intention (TCI), Tax Fairness and Equity (TFE), Tax Knowledge (TKNOW), Tax Morale (TM), and Tax Regulation (TR).

Next, to evaluate the extent to which each construct is empirically separate and different from each other, a discriminant validity test was carried out using the Fornell and Larcker criteria (Franke & Sarstedt, 2019; Hair et al., 2019). Based on this criterion, discriminant validity can be said to be fulfilled if the square root of the AVE value of each construct is greater than the correlation between other constructs, provided that the AVE value exceeds 0.50.(Fornell & Larcker, 1981).

Based on the results of the discriminant validity test using the Fornell-Larcker criterion (Table 4), it can be seen that the square root of the AVE value (diagonal value in the table) for each construct is higher than the correlation between constructs. This indicates that each construct has a good ability to differentiate itself from other constructs in the model, so that all constructs in this study have met the criteria for discriminant validity.

Overall, the results of the reliability, convergent validity, and discriminant validity tests indicate that the measurement model used has met the necessary statistical requirements. This provides a strong basis for proceeding to the next stage of the analysis, namely testing the relationships between constructs in the structural model.

Table 4. Discriminant validity based on the Fornell-Larcker criterion

	KEM	KOM	TCI	TFE	TKNOW	TM	TR
KEM	0.807						
KOM	0.695	0.813					
TCI	0.699	0.707	0.794				
TFE	0.702	0.802	0.765	0.811			
TKNOW	0.672	0.779	0.753	0.772	0.798		
TM	0.686	0.724	0.769	0.767	0.758	0.785	
TR	0.682	0.754	0.719	0.767	0.780	0.744	0.818

Note: Autonomy (KEM), Competence (KOM), Tax Compliance Intention (TCI), Tax Fairness and Equity (TFE), Tax Knowledge (TKNOW), Tax Morale (TM), and Tax Regulation (TR).

4.1.4. Structural model assessment

The structural model assessment in this study was conducted using the Partial Least Squares (PLS) method, as illustrated in Figure 5. The initial step was carried out through Variance Inflation Factor (VIF) analysis to test for the possibility of multicollinearity between constructs. The calculation results showed that all VIF values were below 3, thus it can be concluded that there are no collinearity problems in the model. (JF Hair et al., 2019).

Next, the model's ability to explain the variance of endogenous constructs was evaluated using the R^2 value, which indicates the proportion of the variance of the endogenous construct that can be explained by the exogenous construct. R^2 values of 0.75, 0.50, and 0.25 represent strong, moderate, and weak explanatory power, respectively. (Henseler et al., 2015) In this study, the R^2 values obtained for Independence (KEM) were 0.545, Competence (KOM) was 0.661, Tax Compliance (TC) was 0.579, and Tax Compliance Intention (TCI) was 0.583. These results indicate that the model has moderate explanatory power for all endogenous constructs, as well as good ability to predict taxpayer behavior.

To strengthen this interpretation, an f^2 effect size test was also conducted to assess the magnitude of the influence between constructs. Reference values of 0.02, 0.15, and 0.35 were used to indicate small, medium, and large effects, respectively. (Cohen, 2013). The results of the analysis show that Independence has a moderate effect on Tax Compliance Intention ($f^2 = 0.199$), and Competence also has a moderate effect on Tax Compliance Intention ($f^2 = 0.227$). Meanwhile, Tax Compliance Intention has a very large effect on Tax Compliance ($f^2 = 1.377$), confirming the important role of behavioral intention in determining actual compliance actions. In addition, Tax Fairness and Equity (TFE) has a moderate effect on Independence ($f^2 = 0.166$), Tax Knowledge (TKNOW) has a moderate effect on Competence ($f^2 = 0.274$), Tax Morale (TM) shows a small to moderate effect on Independence ($f^2 = 0.116$), and Tax Regulations (TR) have a moderate effect on Competence ($f^2 = 0.161$).

These findings indicate that although compliance intention is the most dominant determinant of tax compliance behavior, factors such as fairness, knowledge, morality, and regulations still have significant contributions through their indirect influence on Independence and Competence. In other words, the formation of strong tax compliance intention is strongly influenced by the cognitive and psychological aspects of taxpayers that develop through these factors. Furthermore, to test the statistical significance of the path coefficients, a bootstrapping procedure was conducted with 5,000 subsamples at a 5% significance level. The test results indicate that all hypothesized relationships are statistically significant ($p < 0.05$). These findings include direct effects such as the influence of Independence and Competence on Tax Compliance Intention, as well as the influence of Tax Compliance Intention on Tax Compliance, as well as indirect effects mediated by the Independence and Competence constructs.

In general, the results of the analysis provide strong empirical evidence supporting the theoretical premise that increasing taxpayer capacity, autonomy, and commitment are fundamental aspects in encouraging sustainable tax compliance behavior. (Patricia Aguilera-Hermida, 2020). A summary of the path analysis results, including direct and indirect effects between constructs, is presented comprehensively in Table 5.

Table 5 presents the results of the structural model analysis, which demonstrates the direct and indirect influences between the research constructs. The results indicate that all tested relationships are statistically significant, indicating that each variable plays a significant role in shaping the overall model. Interestingly, all mediating relationships

demonstrate a full mediation effect, meaning the mediating variable fully transmits the influence of the independent variable to the dependent variable.

Table 5. Summary of findings based on path coefficients, direct and indirect effects

Hypothesis	Path coefficient (β)	T Statistics	P	Bias, 95% Confidence Interval	Conclusion
TKNOW \rightarrow KOM (H1)	0.487	12,544	0.000	[-0.001, 0.552]	Supported
TM \rightarrow KEM (H2)	0.358	6,545	0.000	[0.005, 0.437]	Supported
TFE \rightarrow KEM (H3)	0.427	8,517	0.000	[-0.000, 0.507]	Supported
TR \rightarrow KOM (H4)	0.374	9,992	0.000	[-0.002, 0.4936]	Supported
KEM \rightarrow TCI (H5)	0.401	5,137	0.000	[0.009, 0.526]	Supported
KOM \rightarrow TCI (H6)	0.428	4,496	0.000	[-0.014, 0.582]	Supported
TKNOW \rightarrow KOM \rightarrow TCI (H7)	0.209	3,886	0.000	[-0.006, 0.303]	Supported, with Full mediation
TM \rightarrow KEM \rightarrow TCI (H8)	0.144	3,561	0.000	[0.006, 0.210]	Supported, with Full mediation
TFE \rightarrow KEM \rightarrow TCI (H9)	0.171	4,087	0.000	[0.004, 0.242]	Supported, with Full mediation
TR \rightarrow KOM \rightarrow TCI (H10)	0.160	3,918	0.000	[-0.005, 0.233]	Supported, with Full mediation

Note: Autonomy (KEM), Competence (KOM), Tax Compliance Intention (TCI), Tax Fairness and Equity (TFE), Tax Knowledge (TKNOW), Tax Morale (TM), and Tax Regulation (TR).

These findings provide strong empirical support for the proposed theoretical framework, confirming that tax knowledge, tax morale, fairness, and tax regulations indirectly influence tax compliance intentions through competence and autonomy. This highlights the important role of psychological and cognitive mechanisms in explaining individual compliance behavior. Overall, these results demonstrate that the developed model has strong validity and provides significant theoretical contributions in understanding how internal and contextual factors jointly determine compliance intentions in the context of this study.

4.2. Discussion

The research results show that the four constructs of the Extended Theory of Planned Behavior (ETPB)—Tax Knowledge, Tax Morale, Tax Fairness and Equity, and Tax Regulation—have a significant influence on the Self-Determination variables, namely Autonomy and Competence. This finding aligns with a study conducted by Musimenta, (2020) which confirms that tax knowledge and morality form the cognitive and affective basis for taxpayer decision-making. In addition, research by Torgler & Schaltegger, (2003) shows that perceptions of fairness and tax regulations contribute to the formation of intrinsic motivation, which ultimately increases compliance awareness. In the context of motivation theory, Ryan & Deci (2020) explains that external cognitive and normative factors can be transformed into internal motivation through the process of value internalization. Thus, these results confirm that knowledge, morality, fairness, and regulation are not merely external factors but also play a role in strengthening individual independence and competence within the tax system. This relationship further provides an important basis for understanding how internal motivation influences tax compliance intentions.

Furthermore, the research results show that Autonomy and Competence have a significant influence on Tax Compliance Intention. This indicates that the higher an individual's level of independence and competence in understanding and managing their tax obligations, the greater their tendency to intend to comply with taxes. This finding strengthens the argument in Self-Determination Theory, which states that when individuals feel personal control and confidence in a behavior, their intrinsic motivation to carry it out increases substantially. (Ryan & Deci, 2020). Empirical research by Jimenez & Iyer, (2016) also shows that taxpayer self-confidence and autonomy play an important role in mediating the relationship between tax awareness and actual compliance behavior. Similarly, a study by (Bobek et al., 2013) found that competence in understanding the tax system increases perceptions of self-efficacy, which ultimately strengthens compliance intentions. In line with these findings, the results of this study confirm that the role of Autonomy and Competence as predictors of compliance intentions is an important foundation for understanding the psychological

mechanisms linking cognitive factors and compliance behavior. Based on these results, this study then further examines how these two motivational factors work as a bridge in shaping Tax Compliance Intentions.

The results of the mediation analysis indicate that Autonomy and Competence act as significant mediators between the ETPB construct and Tax Compliance Intention. This means that the influence of cognitive (tax knowledge), affective (tax morale), and normative (fairness and regulation) factors on tax compliance is not direct, but rather through strengthening taxpayers' internal motivation. This finding aligns with research by Alm & Torgler (2011) which emphasizes that tax compliance behavior is often influenced by psychological and motivational factors stemming from the internalization of values. In addition, Blaufus et al. (2022) shows that the integration of the theory of planned behavior and the theory of autonomous motivation produces a more comprehensive model in explaining voluntary tax compliance. Thus, this research model not only highlights the rational determinants of tax compliance but also emphasizes the importance of psychological and motivational dimensions as a link between external norms and internal intentions.

Scientifically, this study expands the theoretical boundaries by demonstrating that the integration of ETPB and SDT produces a more predictive and conceptually stable model. This approach can be extended to other behavioral contexts requiring intrinsic motivation, such as environmental compliance or social regulation. (Patricia Aguilera-Hermida, 2020; Ryan & Deci, 2020). Practically, the results of this study provide clear policy direction for tax authorities: compliance improvement strategies need to focus on taxpayer psychological empowerment, not just administrative oversight. Education and outreach programs should integrate experience-based training, individual mentoring, and easily accessible digital systems to build confidence and competence. (OECD, 2023; World Bank, 2024). Such an approach would be more effective in fostering voluntary and sustainable compliance among resource-constrained MSMEs.

Overall, this study successfully achieved its stated objective of examining the contribution of psychological factors to the formation of tax compliance intentions and behavior. All hypotheses proved statistically significant, demonstrating a strong fit between theory and empirical data. Thus, this study not only strengthens existing theory but also addresses a gap in previous research that tends to overlook the role of psychological constructs in the context of tax compliance. These findings open up opportunities for further research to employ longitudinal designs to explore the dynamics of changes in intentions and behavior over time. Cross-cultural and cross-sectoral comparative studies are also recommended to test the generalizability of this model across various socioeconomic contexts. Furthermore, the addition of moderating variables such as risk perception, trust in government, and digital experience could enrich our understanding of the conditions under which intrinsic motivation operates most effectively. Through this research direction, the study of tax compliance can develop into a more interdisciplinary, contextualized, and relevant field for modern public policy.

5. Conclusion

This study demonstrates that all constructs in the Extended Theory of Planned Behavior, namely Tax Knowledge, Tax Morality, Tax Fairness and Equity, and Tax Regulation, have a significant influence on the formation of MSME Independence and Competence as explained in Self-Determination Theory. These two psychological factors are proven to be the main predictors that strengthen Tax Compliance Intention, which in turn has a very strong influence on actual Tax Compliance. Mediation analysis reveals that the influence of cognitive, normative, and regulatory factors on tax compliance occurs gradually through strengthening independence and competence, which then encourages the formation of compliance intentions. These findings emphasize the importance of a layered intervention strategy starting from increasing tax literacy, internalizing moral values, perceptions of fairness, and clarity of regulations, followed by empowering the capacity for independence and competence, until the formation of long-term compliance commitment. However, this study has limitations in the form of a cross-sectional design and the use of self-reported data that have the potential to cause bias. Further research is recommended to use longitudinal or experimental designs, combine survey data with actual tax records, and consider contextual factors such as fiscal incentives, economic pressures, and social influences to gain a more comprehensive understanding of MSME tax compliance.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.

- Alm, J., & Torgler, B. (2011). Do ethics matter? Tax compliance and morality. *Journal of Business Ethics*, 101(4), 635–651. <https://doi.org/10.1007/s10551-011-0761-9>
- Amireh, I. A., & Ahmad, N. (2022). Moderation of trust in government in modelling tax compliance behaviour based on tax features. *EPRA International Journal of Economic and Business Review*, 10. <https://doi.org/10.36713/epra2012>
- Balaskas, S., Nikolopoulos, T., Koutroumani, M., & Rigou, M. (2024). Determinants of tax avoidance intentions in tourism SMEs: The mediating role of coercive power, digital transformation, and the moderating effect of CSR. *Sustainability*, 16(21). <https://doi.org/10.3390/su16219322>
- Bellová, J., Špírková, T., & Bellova, J. (1985). The theory of planned behaviour as a research tool in connection with tax law and economics. *Financial Law Review*. <http://www.ejournals.eu/FLR>
- Bentler, P. M., & Huang, W. (2014). On components, latent variables, PLS and simple methods: Reactions to Rigdon's rethinking of PLS. *Long Range Planning*, 47(3), 138–145. <https://doi.org/10.1016/j.lrp.2014.02.005>
- Blaufus, K., Reineke, J., & Trenn, I. (2022). Perceived tax audit aggressiveness, tax control frameworks and tax planning: An empirical analysis. *Journal of Business Economics*, 93(3), 509–557. <https://doi.org/10.1007/s11573-022-01116-6>
- Bobek, D., Hageman, A., & Kelliher, C. (2013). Analyzing the role of social norms in tax compliance behavior. *Journal of Business Ethics*, 115(3), 451–468. <https://doi.org/10.1007/s10551-012-1396-1>
- Cepeda-Carrion, G., Cegarra-Navarro, J.-G., & Cillo, V. (2019). Tips to use partial least squares structural equation modelling in knowledge management. *Journal of Knowledge Management*, 23(1), 67–89. <https://doi.org/10.1108/JKM-05-2018-0322>
- Chen, S. (2024). The impact of tax compliance on platform enterprises' competitive advantage and the role of contract enforcement efficiency. *International Review of Economics & Finance*, 96, Article 103616. <https://doi.org/10.1016/j.iref.2024.103616>
- Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic Press. <https://doi.org/10.4324/9780203771587>
- Cowell, J. M. (2020). Publishing cross-sectional studies. *The Journal of School Nursing*, 36(1), 6–7. <https://doi.org/10.1177/1059840519896452>
- Creswell, J. W. (2017). *Planning, conducting, and evaluating quantitative and qualitative research* (4th ed.). Pearson Education.
- Dauna, Y. (2023). *Model pengukuran kepatuhan pajak, sikap pajak, pengetahuan pajak, keadilan sistem pajak, dan moral pajak*.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum.
- Direktorat Jenderal Pajak. (2024). *PMK 37/2024 bukan pajak baru*. <https://www.pajak.go.id/id/artikel/pmk-372025-bukan-pajak-baru>
- Fadhilatunisa, D., Afidatunisa, S., Miftach Fakhri, M., Negeri Alauddin Makassar, I., & Negeri Makassar, U. (2024). Determinants of tax compliance intention on pre-service tax payer with extended theory of planned behavior. *Journal of Economic Education and Entrepreneurship Studies*, 5(2). <https://journal.unm.ac.id/index.php/JE3S/index>
- Florido-Benítez, L. (2023). Air connectivity and proximity of large airports as an added value for museums. *Museum Worlds*, 11(1), 136–154. <https://doi.org/10.3167/armw.2023.110112>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.2307/3151312>
- Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: A comparison of four procedures. *Internet Research*, 29(3), 430–447. <https://doi.org/10.1108/IntR-12-2017-0515>

- Fuadi, A. O., & Mangoting, Y. (2013). Pengaruh kualitas pelayanan petugas pajak, sanksi perpajakan dan biaya kepatuhan pajak terhadap kepatuhan wajib pajak UMKM. *Tax and Accounting Review*, 1, 18. <https://consensus.app/papers/pengaruh-kualitas-pelayanan-petugas-pajak-sanksi-mangoting-fuadi/e80b54df27f65368a0b82b2bc8789b3e/>
- Guo, M. (2023). Motivation at work: An analysis from the self-determination theory perspective. *SHS Web of Conferences*, 180, Article 03017. <https://doi.org/10.1051/shsconf/202318003017>
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R* (3rd ed.). Springer Nature. <https://doi.org/10.1007/978-3-030-80519-7>
- Hair, J. F., Sarstedt, M., & Ringle, C. M. (2019). Rethinking some of the rethinking of partial least squares. *European Journal of Marketing*, 53(4), 566–584. <https://doi.org/10.1108/EJM-10-2018-0665>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Herman, L. A., Rissi, D. M., & Ramadhea, S., Jr. (2023). *Persepsi kepatuhan perpajakan yang dipengaruhi oleh keadilan prosedural, keadilan distributif, dan keadilan retributif*.
- Hermanto, A. H., Windasari, N. A., & Aprianingsih, A. (2022). Strategies to improve taxpayers' compliance of Indonesian micro small and medium enterprises: PRISMA approach. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara dan Kebijakan Publik*, 7(2), 101–104.
- Jimenez, P., & Iyer, G. S. (2016). Tax compliance in a social setting: The influence of social norms, trust in government, and perceived fairness on taxpayer compliance. *Advances in Accounting*, 34, 17–26.
- Ketchen, D. J. (2013). A primer on partial least squares structural equation modeling. *Long Range Planning*, 46(1–2). <https://doi.org/10.1016/j.lrp.2013.01.002>
- Loverre, M., Chirico, A., Cinque, L., Palombi, T., Alivernini, F., Lucidi, F., Alessandri, G., & Livi, S. (2024). A systematic review of self-determination theory's application in military and police organizations. *Journal of Police and Criminal Psychology*. <https://doi.org/10.1007/s11896-024-09718-2>
- Maseko, N. (2014). Determinants of tax compliance in small and medium enterprises in Zimbabwe. *Journal of Economics and International Business Research*. <https://doi.org/10.2139/ssrn.2237849>
- Miles, J. (2005). *Tolerance and variance inflation factor*.
- Musimenta, D. (2020). Knowledge requirements, tax complexity, compliance costs and tax compliance in Uganda. *Cogent Business & Management*, 7(1). <https://doi.org/10.1080/23311975.2020.1812220>
- OECD. (2023). *Tax administration 2023: Comparative information on OECD and other advanced and emerging economies*. OECD Publishing. <https://doi.org/10.1787/ed1a84b3-en>
- Patricia Aguilera-Hermida, A. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open*, 1, Article 100011. <https://doi.org/10.1016/j.ijedro.2020.100011>
- Rachmawati, N. A., & Ramayanti, R. (2022). Literasi perpajakan bagi wajib pajak UMKM berbasis Undang-Undang Harmonisasi Perpajakan. *Abdimas Galuh*. <https://doi.org/10.25157/ag.v4i1.7082>
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*, 61, Article 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 1–47). Springer International Publishing. https://doi.org/10.1007/978-3-319-05542-8_15-2

- Schoon, I., & Léon, J. (2021). *A review from self-determination theory*. <https://consensus.app/papers/a-review-from-selfdetermination-theory-l%C3%A9on-schoon/66e88b130a1359f0ab7faa0b50517aa8/>
- Sia, G. (2008). *Perilaku kepatuhan pajak individu dalam sistem penilaian mandiri*.
- Stam, E., & Verbeeten, F. (2017). Tax compliance over the firm life course. *International Small Business Journal*, 35(1), 99–115. <https://doi.org/10.1177/0266242615615185>
- Sya'ban, A. G. (2024). *C. Snouck Hurgronje dan wajah Islamnya: Surat-surat para ulama, habaib, mufti, bangsawan, dan tokoh Nusantara lainnya untuk sang penasihat pemerintah Kolonial Hindia Belanda, 1884–1929*. Sahira.
- Taing, H. B., & Chang, Y. (2020). Determinants of tax compliance intention: Focus on the theory of planned behavior. *International Journal of Public Administration*, 44(1), 62–73. <https://doi.org/10.1080/01900692.2020.1728313>
- Teo, T. (2010). A path analysis of pre-service teachers' attitudes to computer use: Applying and extending the technology acceptance model in an educational context. *Interactive Learning Environments*, 18(1), 65–79. <https://doi.org/10.1080/10494820802231327>
- Torgler, B., & Schaltegger, C. (2003). *Tax morale: Theory and empirical analysis of tax compliance*.
- Ustman, & Wahyuni, D. S. (2023). Pengaruh sikap, norma subjektif, dan kontrol perilaku persepsian terhadap kepatuhan pajak UMKM di Pamekasan. *AKTIVA: Jurnal Akuntansi dan Investasi*.
- Vörösmarty, G., & Dobos, I. (2020). Green purchasing frameworks considering firm size: A multicollinearity analysis using variance inflation factor. *Supply Chain Forum*, 21(4), 290–301. <https://doi.org/10.1080/16258312.2020.1776090>
- World Bank. (2024). *Digitalizing tax systems for inclusive growth: Policy directions for emerging economies*. World Bank Group.