

# TAX MORALE AND TAXPAYER COMPLIANCE IN WEST SUMATRA: EMPIRICAL EVIDENCE VIA PARTIAL LEAST SQUARES STRUCTURAL EQUATION MODELLING (PLS-SEM)

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**Abstract:** *This study examines the effect of tax morale on tax compliance in the Indonesian self-assessment system, with a regional focus on West Sumatra. Drawing on the psychological tax contract and the slippery slope model, the study analyzes the relationship between tax knowledge and tax behaviour using data from 363 taxpayers within the framework of Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings support the psychological tax contract framework and confirm the importance of psychological factors, indicating that tax morale is a significant predictor of tax compliance. In particular, tax morale is found to have a strong effect on compliance, while tax knowledge also exerts a positive influence. The results suggest that policy interventions should focus on increasing voluntary compliance by prioritizing measures that build institutional trust, encourage civic participation, and enhance transparency in the use of public funds, alongside targeted technical tax education. Emphasizing ethical and trust-building strategies is likely to yield greater improvements in tax compliance than technical instruction alone.*

**Keywords:** *Tax Morale; Taxpayer Compliance; Indonesia Self-Assessment System; PLS-SEM*

## Introduction

Infrastructure, social welfare programs, and public services that directly affect citizens' quality of life are funded by taxes, which serve as the cornerstone of national development. Consequently, effective enforcement measures and the voluntary participation of individual taxpayers are critical to the success of Indonesia's self-assessment tax system. Since its introduction in 1983, the self-assessment system has shifted responsibility to taxpayers, who must independently calculate, report, and pay their taxes. This reform aligns with international best practices, however, it also presents challenges in sustaining voluntary compliance, which remains the foundation of fiscal sustainability (Alm & Torgler, 2011; Hantono, 2021).

While the self-assessment system reflects international best practices, its effectiveness in Indonesia depends heavily on the willingness of individual taxpayers to comply, where it is persistent challenges remain evident in both national and regional contexts. In Indonesia, tax collection from individual taxpayers accounted for about 13.3 percent of total government revenues, voluntary compliance remains a challenge (IMF, 2022; Werniger & Gwardzieszka, 2023). For example, in West Sumatra, despite strong enforcement efforts that have shown progress in improving tax compliance, the registered individual taxpayers which known as *Wajib Pajak Orang Pribadi*, (WPOP)) contributed less than 0.01 percent of the total government tax revenue of 1.869 trillion rupiah in year 2023. This evidence is consistent with several studies which suggest that there is still no consensus on whether tax compliance necessarily increases tax collection (Algeria, 2023; Pramudra, 2019). Among the challenges often stem from taxpayers' limited knowledge and perceptions of tax authorities' inefficiencies as highlighted by Luttmer and Singhal (2014), Parlaungan (2017), and Slemrod (2019). This study is therefore designed with two main objectives:

1. To determine how tax literacy and tax knowledge influence tax compliance.
2. To examine whether the relationship between tax literacy and tax knowledge is strengthened or weakened by the moderating effect of tax compliance.

## Literature Review

Despite apparent improvements in voluntary compliance, evidence from both local and international studies suggests that compliance gaps persist in emerging economies, particularly where tax morale and institutional trust are relatively low (Ali et al., 2014; Feld & Frey, 2007; Bird & Martinez-Vazquez, 2014). Within this context, institutional and psychological factors such as tax literacy, tax knowledge, and trust in tax authorities play an equally important role in shaping taxpayers' willingness to comply with tax regulations. Therefore, increasing tax literacy and broadening the tax incentives are not sufficient to ensure voluntary compliance, especially among individual taxpayers in emerging economies (IMF, Ali et al., 2014).

Numerous studies have shown that taxpayers who understand their legal and procedural obligations are more likely to comply with on a voluntary basis (Nugroho, 2022; Santosa et al., 2025; Setyaningsih & al., 2024). but the empirical evidence is still inconclusive. While some studies in Indonesia report strong positive effects of tax education such as Setiawati & Pardosi, 2025; Silaban & Satriawan, 2020; Zahra & Anggraini, 2022; Intansari & Supramon, 2025), others findings reported insignificant effects (Setiawati & Pardosi, 2025). Similar inconsistencies are apparent in Malaysia and other ASEAN countries, where the effectiveness of tax literacy initiatives is often undermined by perceived shortcomings in the tax administration's enforcement (Ghani et al., 2019; Masud et al., 2020).

Responding to same issue, Feld and Frey (2007), Luttmer and Singh (2014) and Webley & Ashby (2010) indicate that these differences have encouraged to tax researchers' focus on behavioural factors influencing tax compliance, with tax morale as main explanatory construct. Moreover, the incentives to comply with tax obligations are influenced by institutional trust, cultural values, and moral principles, which collectively described as fiscal morality. Fiscal morality extends the rational choice framework by emphasizing compliance within a broader socio-psychological context such as perceived fairness, legitimacy, and the quality of governance as key components of tax compliance (Kogler et al., 2013; Rahm et al., 2017). Kirchler et al. (2008), however argued that compliance should base on a link between ethical beliefs and cognitive understanding rather than technical skills.

### Research Methodology

This study adopts a quantitative research design, which is particularly suited to testing causal and relationships among the constructs. Consistent with the main objective is to examine the extent to which tax knowledge (independent variable) influences individual taxpayer compliance (dependent variable), while also assessing the moderating role of tax morale. This methodological choice aligns with the study's theoretical orientation, which integrates cognitive and moral dimensions of compliance behaviour within the frameworks of the psychological tax contract (Feld & Frey, 2007) and the slippery slope model (Kirchler et al., 2008).

Following the rationale for adopting a quantitative design, the use of PLS-SEM provides the necessary analytical rigor to empirically test the study's theoretical model and to capture both the direct and moderating effects of tax knowledge and tax morale on compliance behaviour (Kogler et al., 2013). This method is particularly useful in behavioural research, where complex relationships and non-normality data distributions are common. Moreover, PLS-SEM offers a distinctive perspective on the mechanisms governing tax compliance by facilitating the investigation of direct, indirect, and moderating effects.

Since the study goes beyond descriptive analysis by empirically validating a theoretical model that explains the relationship between taxpayers' cognitive capacities, the integration of cognitive and moral dimensions provides a more comprehensive account of taxpayer behaviour within Indonesia's self-assessment system, where voluntary compliance is essential to maintaining fiscal integrity (Alm & Torgler, 2011; Hantono, 2021). Examination the linkages, this study advances theoretical understanding while also demonstrating clear policy relevance. It enriches the tax-compliance literature by bridging cognitive-behavioural and socio-psychological perspectives. The findings offer actionable guidance for tax authorities and policymakers in designing evidence-based interventions to enhance voluntary compliance through targeted knowledge dissemination, moral reinforcement, and measures that strengthen institutional trust (Luttmer & Singhal, 2014; Oktris et al., 2024; Torgler, 2003).

The population of this study comprises all registered individual taxpayers in West Sumatra Province. According to the Directorate General of Treasury (DJPb, 2024), a total of 1,444,059 individual taxpayers were recorded as of October 2024. Given the large population size, the study employed a proportional stratified random sampling technique to enhance representativeness and minimize sampling bias. Stratification was based on employment status by distinguishing between employees and non-employees to ensure proportional representation of both strata within the final sample. This approach is appropriate because occupational status

significantly influences compliance behaviour through differences in income sources, reporting patterns, and enforcement exposure (Henseler et al., 2015b; Kirchler, 2007; Torgler, 2007)

To determine the minimum required sample size, the study adopted Krejcie and Morgan's (1970) sample size determination table, which provides an empirically validated reference for large populations. At a 95% confidence level and a 5% margin of error, a minimum of 363 respondents was required for populations exceeding one million. Data were collected through a standardized self-administered questionnaire distributed via both offline and online channels. Offline surveys were conducted at four local tax offices such as Bukittinggi, Payakumbuh, Solok, and Padang Dua. While online survey were gathered through the Kuisio platform. This dual strategy expanded geographic coverage and enhanced response diversity. A six-point Likert scale, ranging from "Strongly Disagree (1)" to "Strongly Agree (6)," was employed to reduce central tendency bias and improve response differentiation, consistent with measurement recommendations by Abdul (2010) and Dolnicar (2013).

The study focused on three core constructs: Tax Knowledge (independent), Tax Morale (moderating), and Tax Compliance (dependent). The analysis was conducted into two stages. The first stage involved descriptive analysis to profile respondents' demographics (gender, age, education, and occupation) and the second stage use Partial Least Squares Structural Equation Modeling (PLS-SEM) to test both the measurement model (outer model) and the structural model (inner model). The measurement model was evaluated through indicator reliability (factor loadings  $> 0.7$ ), Composite Reliability (CR  $> 0.7$ ), Average Variance Extracted (AVE  $> 0.5$ ), and discriminant validity using the Fornell–Larcker criterion (Hair & Alamer, 2022; Henseler et al., 2015b). The structural model was assessed using  $R^2$ ,  $f^2$ , and  $Q^2$  statistics to quantify explained variance, effect size, and predictive relevance. Bootstrapping with 5,000 resamples was employed to test hypothesis significance through  $t$ -statistics and  $p$ -values (Hair & Alamer, 2022) For moderating analysis, tax morale was modelled as an interaction to test its potential strengthening or weakening effect on the relationship between tax knowledge and tax compliance. This analysis explained whether compliance behaviour differs among taxpayers with high versus low moral orientations, consistent with behavioural frameworks in fiscal psychology (Feld & Frey, 2007; Kirchler et al., 2008).

## Findings and Discussion

This section reported the socioeconomic background of respondents and their opinions on tax knowledge, tax morale, and compliance. It also summarizes and discusses the work's important findings based on the previously established methodological framework. The direct and moderating effects of these constructs are explained by structural model testing, which advances the understanding of behavioural factors influencing voluntary compliance in Indonesia's self-assessment system. A descriptive summary of demographic and perceptions of important dimensions from a survey of 363 individual taxpayers in West Sumatra is shown in Table 1. The two largest age groups of respondents were 45 to 54 years old (28 percent) and 35 to 44 years old (32 percent). This shows that female taxpayers made up 56 percent of the sample and that taxpayer groups were represented by a mature and productive demographic profile. Regarding educational background, 40% of respondents had a bachelor's degree, followed by high school (20.94%) and diploma holders (19.28%). From an occupational perspective, the respondents showed considerable diversity, including civil servants (34 percent), employees in the private sector (29 percent), and sole proprietors (37 percent). By ensuring that the perspectives obtained represent the broader characteristics of Indonesia's individual taxpayer, this variation enhances the statistical accuracy of the data.

**Table 1: Demographic Characteristics of Respondents (n = 363)**

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	161	44.35
	Female	202	55.65
Age	25–34 years	62	17.10
	35–44 years	116	31.96
	45–54 years	103	28.37
Education Background	High School	76	20.94
	Diploma	70	19.28
	Bachelor's Degree	146	40.22
	Postgraduate	71	19.56
Occupation	Civil Servant	124	34.2
	Private Employee	104	28.6
	Entrepreneur / SME	135	37.2

To assess respondents' perceptions of important concepts, this study used the Percentage of Maximum Possibilities (POMP) score to provide a standardised assessment of tax knowledge, tax morality and tax compliance. For the average Likert scale response, the POMP scores were transformed into standardized percentages, which varied from 0 to 100. This enable the various constructs to be interpreted and compared more clearly (Cohen, 2013; Cohen et al., 1999; Stanaway et al., 2019; Zumrawi & Macfadyen, 2023). The criteria for interpreting the POMP scores are depicted in Table 2.

**Table 2: Criteria for Interpreting Percentage of Maximum Possibilities (POMP) Scores**

Percentage Range (%)	Interpretation Criteria
85 – 100	Very Good
66 – 84	Good
51 – 65	Fair
36 – 50	Poor
0 – 35	Very Poor

(Adapted from Cohen et al., 1999; Wu, 2007; Zumrawi & Macfadyen, 2023)

Based on the overall mean scores of the respondents for every construct are relatively high a presented in Table 3. With a POMP score of 83 percent, the tax knowledge received a score of 4.97, which is categorized as "Good.". This suggests that most taxpayers have sufficient understanding of their tax obligations and reporting procedures, but further education is required to improve their technical literacy (Fauziati et al., 2016; Hardika et al., 2021; Newman et al., 2018). The construct of tax compliance received the highest score of 5.12 (POMP = 85 percent) and tax morale received a mean score of 5.07 (POMP = 85 percent), both of which were rated as "Very Good.". These results indicate that intrinsic motivation and ethical commitment are important for sustaining taxpayer compliance than mere cognitive comprehension. This is consistent with the behavioural tax literature of Feld & Frey (2007), Luttmer & Singhal (2014) and Torgler (2003), which propose that voluntary compliance is shaped by moral and ethical considerations, rather than purely rational considerations.



Further analysis is then conducted on the ranking structure of respondent's behavioural characteristics as shown in Table 2, which shows that tax compliance is ranked highest, followed by tax morality and tax knowledge. This indicates that taxpayers with a high level of voluntary tax compliance is mainly motivated by moral values and Trust in the tax administration. The results support the psychological tax contract paradigm developed by Feld and Frey (2007) and Kirchler et al. (2008). They are in line with the broader international consensus that voluntary tax compliance promotes civic accountability, a sense of fairness and institutional trust (Leones-Mantero et al., 2020; Macfadyen and Zumrawi, 2023).

**Table 3: Descriptive Statistics of Variables**

Variable	Mean Score	POMP (%)	Category	Rank
Tax Knowledge	4.97	82.79	Good	3
Tax Morale	5.07	84.62	Very Good	2
Tax Compliance	5.12	85.41	Very Good	1

The analysis of both measurement and structural models has enhanced the analytical depth and has enabled the findings to be incorporated into the broader literature on behavioral economics and tax compliance. Based on the measurement model shown in Tables 4, the results show strong psychometric properties, with all factors load exceeding the recommended limits, which is a confirmation of convergent validity and reliability. As presented in Tables 5 and 6, the discriminatory validity was assessed both based on Fornell-Larcker and HTMT. More specific, the Table 5 shows that all constructs achieved AVE values above the recommended 0.50, which indicates that they have sufficient convergence. The square roots of the AVE of tax knowledge (0.725), tax morale (0.596) and tax compliance (0.688) are greater than the correlation between the two constructs, indicating that each construct is empirically different. The result for Fornell-Larcker test is therefore met. The analysis of the HTMT in Table 6 is further supports the discriminatory validity. All HTMT values were below the limit of 0.85, which suggesting that the constructs are not subject to multiple collinearity or constructs overlap. This confirms that tax knowledge, tax morale and tax compliance measure different basic constructs in the model. the results show that the discriminant validity is fully established and that structural relationships between constructs are reliably interpreted.

**Table 4: Reliability and Validity (Outer Loadings)**

Indicator	Tax Knowledge	Tax Morale	Tax Compliance
Tax Knowledge	0.812	–	Valid
Tax Knowledge	0.836	–	Valid
Tax Knowledge	0.846	–	Valid
Tax Knowledge	0.877	–	Valid
Tax Knowledge	0.829	–	Valid
Tax Knowledge	0.882	–	Valid
Tax Knowledge	0.864	–	Valid
Tax Knowledge	0.866	–	Valid
Tax Morale	–	0.711	Valid
Tax Morale	–	0.755	Valid
Tax Morale	–	0.820	Valid

Indicator	Tax Knowledge	Tax Morale	Tax Compliance
Tax Morale	–	0.807	Valid
Tax Morale	–	0.805	Valid
Tax Morale	–	0.727	Valid
Tax Compliance	–	–	Valid
Tax Compliance	–		Valid
Tax Compliance	–		Valid
Tax Compliance	–		Valid

**Table 5: Discriminant Validity (Fornell–Larcker Criterion)**

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Tax Knowledge (X)	0.946	0.950	0.955	0.725
Tax Morale (Z)	0.864	0.865	0.898	0.596
Tax Compliance (Y)	0.851	0.878	0.898	0.688

**Table 6: HTMT Ratio**

Construct	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Tax Knowledge (X)	0.946	0.950	0.955	0.725
Tax Morale (Z)	0.864	0.865	0.898	0.596
Tax Compliance (Y)	0.851	0.878	0.898	0.688

Table 7 shows the determination coefficient ( $R^2$ ) for the endogenous construct. The findings show that tax compliance (Y) is 0.247 and adjusted  $R^2$  is 0.241. This means that the predictors in the model explain about 24.7 percent of the variation in tax compliance. Although this reflects a low to moderate explanatory power according to established guidelines by Hair & Alamer (2022), it is within the range commonly seen in behavioural research where psychological and attitudinal constructs typically produce modest R-values (Cohen, 2013). These results show that the Structural Model has an acceptable explanatory and predictive capability, which supports its suitability for analysing tax compliance determinants.

**Table 7: Structural Model ( $R^2$  and  $Q^2$ )**

Endogenous Construct	$R^2$	Adjusted $R^2$
Tax Compliance (Y)	0.247	0.241

Table 8 reports the path coefficients for the structural model. The results show that tax knowledge ( $\beta = 0.141$ ) has a positive relationship with tax compliance, indicating that higher levels of tax knowledge are associated with an increase in tax compliance behavior. Although the coefficient is relatively small, it suggests that knowledge contributes meaningfully to taxpayers' compliance decisions. Tax morale ( $\beta = 0.323$ ) demonstrates a stronger positive effect

on tax compliance. This suggests that individuals with higher intrinsic motivation and stronger moral commitment to fulfilling tax obligations are substantially more likely to comply. Among the constructs, tax morale exerts the strongest influence, highlighting its central role in shaping compliance behavior. The moderating effect of tax Knowledge and tax morale on tax compliance yields a negative and weak coefficient ( $\beta = -0.042$ ), which suggests that tax morale does not enhance the relationship between tax knowledge and compliance. It slightly reduces the impact, although the magnitude of the effect suggests that this is negligible. This means that tax knowledge and tax morality function primarily as independent predictors rather than interacting in a jointly influence compliance with the taxation rules. The path coefficient results indicate that tax morale is the most influential determinant of tax compliance, followed by tax knowledge, while the moderating effect is minimal. The results support Feld and Frey's (2007) psychological tax contract framework by demonstrating that tax morality is a more robust and dependable factor for tax compliance than tax knowledge. The superiority of ethical and civic duty over mere procedural knowledge is demonstrated by the fact that taxpayers with a strong sense of morality can still fulfil their obligations even if they have very little technical knowledge

**Table 8: Path Coefficients and Hypotheses Testing**

<b>Path</b>	<b><math>\beta</math> (Coefficient)</b>
Tax Knowledge (X) $\rightarrow$ Tax Compliance (Y)	0.141
Tax Morale (Z) $\rightarrow$ Tax Compliance (Y)	0.323
Moderating Effect (X $\times$ Z) $\rightarrow$ Tax Compliance (Y)	-0.042

The structural model was evaluated to assess the direct and moderating effects of tax knowledge and tax morale on tax compliance are presented in Table 9. The path from tax knowledge to compliance was positive ( $\beta = 0.141$ ,  $M = 0.158$ ,  $SD = 0.072$ ) but only marginally significant ( $t = 1.954$ ,  $p = 0.051$ ), indicating that while familiarity with tax rules may encourage compliance, its influence is relatively weak and not statistically robust. By contrast, the path from tax morale to compliance was both substantial and highly significant ( $\beta = 0.323$ ,  $M = 0.316$ ,  $SD = 0.071$ ,  $t = 4.579$ ,  $p < 0.001$ ), underscoring the importance of intrinsic motivation, ethical responsibility, and institutional trust as primary behavioral drivers. These results highlight that tax morale exerts a stronger and more consistent effect on compliance than technical knowledge, reflecting the central role of psychological and normative factors in shaping taxpayer behavior.

The moderating effect of tax knowledge and tax morale on compliance was negative and statistically insignificant ( $\beta = -0.042$ ,  $M = -0.031$ ,  $SD = 0.037$ ,  $t = 1.152$ ,  $p = 0.250$ ), suggesting that tax morale does not alter the relationship between knowledge and compliance. Instead, tax morale operates independently, with taxpayers who possess strong tax morale behavior demonstrating compliance regardless of their level of technical knowledge. The findings confirm that tax morale is the important predictor of compliance, while tax knowledge plays only a marginal role. These results lend empirical support to behavioral tax compliance theories such as the Psychological Tax Contract (Feld & Frey, 2007) and the Slippery Slope Framework (Kirchler et al., 2008), which emphasize that voluntary compliance is more rooted in trust, fairness, and moral obligation than in coercion or procedural literacy.



Table 9: Effect Sizes ( $f^2$ )

Path	Original Sample (O)	Mean (M)	Std. Dev.	t-Statistic	p-Value	Result
Tax Knowledge (X) → Tax Compliance (Y)	0.141	0.158	0.072	1.954	0.051	Not Supported (marginal)
Tax Morale (Z) → Tax Compliance (Y)	0.323	0.316	0.071	4.579	0.000	Supported
Moderating Effect (X×Z) → Tax Compliance (Y)	-0.042	-0.031	0.037	1.152	0.250	Not Supported

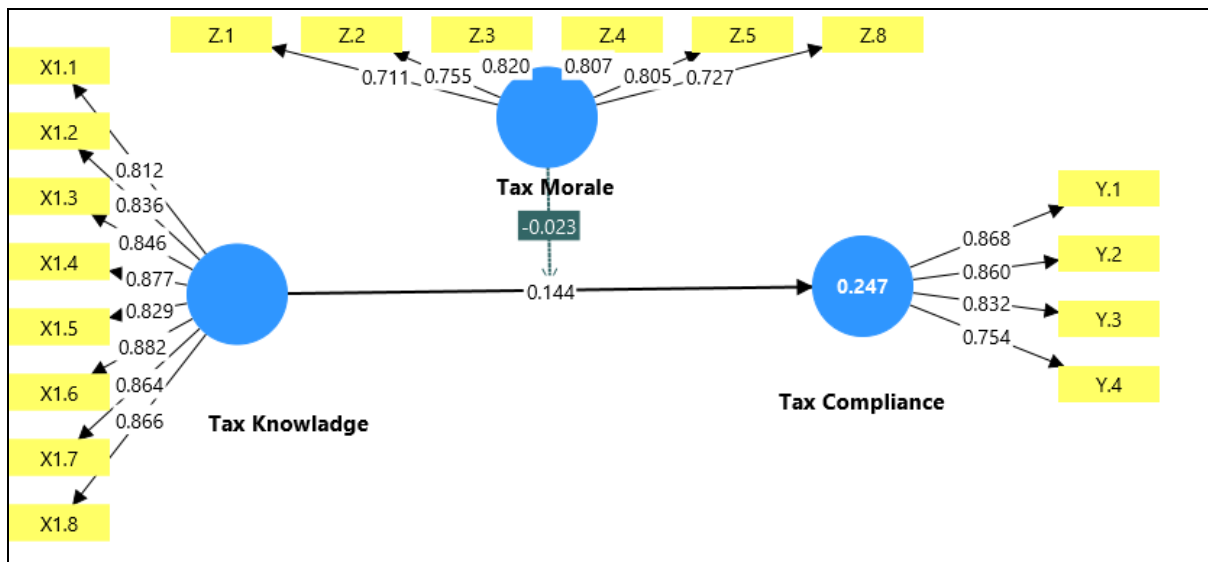


Figure 1: Structural Model of Tax Knowledge, Tax Morale and Taxpayer Compliance Based on PLS-SEM Analysis.

### Conclusion and Implications

The study provides empirical evidence that tax morality is a stronger and more consistent influence on tax compliance than tax knowledge in West Sumatra. Although a technical understanding of tax procedures contributes to compliance behaviour, its impact is relatively small and not statistically significant. On the contrary, intrinsic motivation, ethical accountability and trust in institutions are the main drivers of voluntary compliance. These findings reinforce the theoretical propositions of the psychological tax contract and the slippery slope (both of which stress that tax compliance is based on fairness, legitimacy, and moral obligations, not coercion and procedural literacy). The absence of any significant moderating effect between tax knowledge and tax morality also suggests that the two constructs operate independently of each other. Taxpayers with strong moral convictions demonstrate compliance regardless of their level of technical knowledge, underlining the importance of moral and civic values for preserving tax integrity. This insight advances the literature on behavioural taxation by bridging the cognitive and socio-economic dimensions of the issue and also provides practical guidance for policy-makers. The results highlight the need for more than technical tax training. Efforts to strengthen voluntary compliance should be a priority in strategies for building institutional trust, increasing transparency in the use of public funds and fostering civic responsibility. Ethical reinforcement and confidence building initiatives are likely to lead to

more sustainable compliance improvements than technical training alone. Finally, the study contributes to both theory and practice by demonstrating that tax morality is the basis of voluntary compliance in the Indonesian self-assessment system. Future research can extend these findings by exploring cross-regional comparisons, longitudinal analyses and the role of cultural values in tax behaviour. Such investigations would deepen understanding of the complex interplay of cognition, morality and compliance, and inform more effective governance and tax reform.

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