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## Taxpayer Compliance in Indonesia's Agricultural Sector: Roles of Digital Administration, Tax Morale, and Perceived Sanctions

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### Abstract

Tax compliance in Indonesia remains a persistent challenge, particularly among business entities operating in sectors characterized by complex transactions and varying degrees of formalization, such as agricultural production facilities (saprotran). The specific context of this sector has received limited empirical attention, particularly regarding how digital tax administration and behavioral factors jointly shape compliance behavior. This study aims to examine the influence of digital tax administration systems, tax morale, and perceived tax sanctions on taxpayer compliance among saprotran businesses in Indonesia. Adopting a quantitative research design, this study utilizes census data collected through a structured questionnaire distributed to all identified saprotran businesses in several regions on the island of Java, yielding 97 valid responses from owners or directors who make tax-related decisions. The data were analyzed using statistical application SmartPLS 3 to assess the validity and reliability of the measurements and the structural relationships between the variables. The results indicate that the quality of digital tax administration, tax morale, and tax sanctions each have a positive and statistically significant influence on taxpayer compliance in the sector. By empirically testing these relationships in the context of agricultural production facilities, this study offers sector-specific evidence supporting the relevance of technology-based, psychological, and deterrent mechanisms in explaining compliance behavior, while providing focused implications for the design of digital tax reforms, taxpayer education, and consistent enforcement strategies in similar semi-formal business environments.

#### KEYWORDS

digital tax administration system; tax morale; tax sanctions; tax compliance.

### Introduction

In Indonesia, taxation plays a crucial role as the primary source of state financing, including in vital sectors such as agriculture. Taxes contribute the largest share to the state budget and support the state's efforts in infrastructure development, economic empowerment, and improving people's welfare (APBN Kita, 2023). Although tax revenue has increased year over year, the national tax ratio was 12,1% in 2022, below the average tax ratio of 36 Asia-Pacific countries (OECD, 2024). This condition indicates the need for additional efforts to improve the tax base and compliance.

Tax compliance fell short of anticipated targets, as evidenced by the discrepancy between the number of registered taxpayers and those who filed their Annual Tax Returns (SPT). In 2024, there were 19.273.366 registered taxpayers, but only 15.930.939 taxpayers submitted annual SPTs. It means that more than 3.3 million taxpayers failed to fulfil their reporting obligations (see table 1).

In the MSME sector, the Minister of Cooperatives and Small and Medium Enterprises, Teten Masduki, stated that the tax contribution of Micro, Small, and Medium Enterprises (MSMEs) to national tax revenue remains relatively low. Therefore, the government encourages improved tax compliance among MSME operators, particularly as the applicable final Income Tax (PPH Final) rate is relatively low

**Table 1.** Taxpayers Reporting & Compliance Ratio

	2024	2023	2022	2021	2020
Registered Taxpayers Obligated to Tax Returns	19.273.366	19.182.071	19.075.197	19.002.585	19.006.794
Taxpayers Reporting Annual Income Tax Returns	15.930.939	16.682.564	16.556.759	15.976.387	14.755.255
Compliance Ratio	83%	87%	87%	84%	78%

Source: (Laporan Tahunan DJP, 2024)

(Catriona & Sukmana, 2021).

In response to these challenges, the government initiated reforms and digitised tax administration, including the launch of the e-filing system, e-SPT, and Coretax, which integrates all tax processes into a single digital platform (Katadata, 2023). The digitisation of tax administration represents a transformative strategy that markedly enhances compliance levels and fosters improved taxpayer conduct (Slimani, 2025a). This digitalisation provides easy access, efficiency, transparency, and security from registration and reporting to tax payments (Al-Okaily, 2024; Sibarani et al., 2024a). Recent studies show that digitising tax administration significantly improves taxpayer behaviour and compliance. Nevertheless, the success of digitalisation remains heavily dependent on the standard of socialisation, levels of literacy, technological reliability, and acceptance of systems among informal business operators, including those in the agricultural inputs sector (Abu-Silake et al., 2024).

Practice in the field shows that many business actors outside big cities, especially in agricultural production facilities, still face obstacles in using digital systems. Varying levels of tax literacy and technology create difficulties in reporting and fulfilling online tax obligations, underscoring the importance of continuous investment in the digitalisation of tax administration and the need to harmonise technology standards (Abad-Segura et al., 2025). It is important in the agricultural sector, given the uncertainty and market fluctuations that can affect businesses' ability to meet their tax obligations (Fitriani & Muniarty, 2020). The government needs to strengthen training programs and socialisation, and provide accessible, easy-to-use digital services to minimise these barriers.

In addition to technological factors, psychological factors, such as tax morality, have also proven to be a key in encouraging taxpayer compliance. Internal moral motivation is a significant driver of voluntary compliance. Tax complexity is related to compliance behaviour, and internal factors such as ethical views on tax obligations play a crucial role: the higher a person's tax morale, the greater the tendency toward compliance (Mat Jusoh et al., 2021). Trust in the government, transparency in tax management, and an understanding of the benefits of taxes for the community are the basis for the growth of voluntary compliance (Victory et al., 2023). In many cases, inclusive education and clear communication have proven effective in boosting tax morale (Soufiene et al., 2024), thereby increasing compliance levels.

No less critical, perceptions of tax sanctions also affect the compliance behaviour of individuals and business entities. Reasonably and proportionately imposed administrative penalties can discourage non-compliance, enhance taxpayers' payment adherence, and uphold the credibility of the tax regime. The perceived risk of such tax sanctions encourages greater compliance with fiscal duties among taxpayers (Ebimobowe, 2023a). On the other hand, if authorities implement sanctions inconsistently or discriminatorily, they can undermine taxpayers' trust and participation (Charviany et al., 2024a; Gulzar et al., 2024a).

The agricultural production sector itself presents its own challenges with complex distribution chains, the dominance of cash transactions that are difficult to supervise, and low tax literacy. The implementation of tax policies in this sector must

take into account not only technical factors but also access to technology, business actor profiles, and adaptive and inclusive educational needs. Cross-border research emphasises the importance of user-friendly digitalisation, comprehensive tax education, and periodic monitoring and evaluation to ensure the system meets the needs of all taxpayers across various levels of society, especially in the agricultural and rural sectors (Wulandari & Dasman, 2023). The government and tax authorities are required to continue developing innovative, responsive, and empowering services to achieve a modern, inclusive, and fair tax system (Bellon et al., 2022).

Although prior tax compliance studies have extensively examined digital tax administration, tax morale, and tax sanctions, most have treated these determinants either in isolation or within relatively homogeneous MSME or non-agricultural contexts. Such studies implicitly assume stable income patterns, relatively uniform levels of formalization, and adequate digital readiness, thereby overlooking sectors in which these assumptions may not hold. Consequently, it remains conceptually and empirically unclear whether the mechanisms proposed by the Technology Acceptance Model, the Theory of Planned Behaviour, and Deterrence Theory operate similarly in semi-formal sectors characterised by cash-based transactions, digital constraints, and income volatility.

This study addresses this gap by empirically testing the simultaneous relevance of digital tax administration quality, tax morale, and perceived tax sanctions within Indonesia's agricultural production facilities (saprotran) sector. Rather than introducing new predictors, the study contributes by examining the boundary conditions of established compliance theories and demonstrating how technological, psychological, and deterrence mechanisms jointly shape compliance behaviour in a sector where their applicability cannot be theoretically assumed.

#### Literature Review

Specifically, the Technology Acceptance Model (TAM) (Davis, 1989a), is used as an explanatory lens for the Digital Tax Administration System, focusing on how perceived usefulness, ease of use, and system reliability relate to taxpayers' willingness to comply with digital reporting and payment procedures. The Theory of Planned Behaviour (TPB) (Ajzen, 1991), underpins the Tax Morale construct by framing taxpayers' moral attitudes, perceived social norms, and perceived behavioural control as psychological conditions associated with voluntary compliance. Meanwhile, Deterrence Theory (Becker & Landes, 1974) provides the theoretical basis for the Tax Sanctions construct by conceptualising sanctions as an external control mechanism that discourages non-compliant behaviour.

These theories are not integrated into a single explanatory framework, nor does the model test interactions or mediating mechanisms across theoretical domains. Instead, each theory is applied in a parallel and construct-specific manner to support three direct hypotheses concerning the relationships between digital tax administration, tax morale, tax sanctions, and tax compliance. This approach allows the study to remain theoretically parsimonious while empirically examining whether established compliance mechanisms retain explanatory relevance within the agricultural production facilities sector.

### Digital Tax Administration System

The state tax authority defines the digitalised tax administration system as the integration of information technology across the entire process of service delivery, reporting, supervision, and tax collection conducted online. This digitalisation is not just about automating procedures. Still, a comprehensive transformation that spans registration, tax return reporting, tax payment, and supervision and auditing, carried out through official government platforms such as e-filing, e-SPT, e-billing, and the Tax Core Tax System (Katadata, 2023).

The use of official access as the leading indicator of digitalisation ensures that every tax process runs legally, is easy to trace, and minimises the risk of abuse, as all services use authentic government channels (Ripol-Saragosi & Gomeleva, 2021a). In addition, ease of service is a crucial aspect, evident in a user-friendly application interface and concise reporting procedures, so that taxpayers can fulfil their obligations anytime, anywhere without excessive administrative obstacles (Sibarani et al., 2024b).

Digital system efficiency is achieved through automated data validation, cost savings, and much faster administrative processes than in conventional systems (Dhaliwal, 2023). All of this must be supported by technological reliability, namely application stability and data security, so that taxpayers have a service experience free of technical interference and feel confident that their tax data is well protected (Slimani, 2025b). (Roshaliya et al., 2024) found that digitalisation through digital accounting and digital organisations can improve MSME performance. It is particularly relevant to the agricultural sector, where digital implementation can accelerate tax reporting and improve the accuracy of reported data. Education is an equally important indicator, considering that the transition to a digital system requires adaptation, especially for taxpayers in the informal or rural sectors. Socialization, training, and technical guidance activities need to be expanded to increase literacy and encourage all groups of taxpayers to be able to make optimal use of digital services (Wogo et al., 2023a).

Strengthening these indicators contributes to tax compliance. Empirical studies show that ease of access, efficiency, reliability, and adequate education encourage the growth of trust and convenience of taxpayers in transacting with tax authorities. It fosters both direct and indirect adherence to formal requirements, including punctual reporting and payments that align with prescribed regulations and guidelines, thereby ensuring compliance with the essence of justice and contributing to the state (Al-Okaily, 2024). The implementation of digitalisation also reduces the potential for fraud, facilitates oversight, and strengthens law enforcement by ensuring all data is recorded in an integrated, transparent manner (Abad-Segura et al., 2025). Thus, the better the quality and inclusiveness of the digitalisation of the tax administration system, the greater the effect on increasing tax compliance at all levels of society, including in strategic sectors such as agricultural production facilities (Damamisau Mohammed et al., 2023).

### Tax Morals

Tax morality is an intrinsic motivation that encourages individuals or groups to fulfil their tax obligations based on values, norms, and social awareness, even without direct supervision from tax authorities. Tax morality reflects the belief and ethics that paying taxes is a moral responsibility for every citizen to support public services and improve common welfare. This tax morality is formed and measured through several leading indicators. First, taxpayers' trust in the government and tax institutions is the primary foundation. A high level of trust reinforces the belief that taxes paid are used transparently and fairly in the public interest. It also

strengthens a sense of moral responsibility (Daneshwara & Riandoko, 2023; Kumi et al., 2023). Second, social and cultural norms around taxpayers have a significant influence; societal norms that consider paying taxes as a positive obligation will increase the encouragement of voluntary tax compliance (Arezzo et al., 2023; Nguyen, 2022; Ripol-Saragosi & Gomeleva, 2021b). Third, taxpayers' knowledge and understanding of tax regulations and benefits are very decisive. Taxpayers who understand tax rights, obligations, and objectives tend to have higher tax morale (Albert & Fadjaranie, 2022; Mat Jusoh et al., 2021). Fourth, effective tax education and socialisation by government or authorities play an essential role in shaping perceptions and improving tax morale through tax inclusion programs, counselling, and policy transparency (Paulus & Tarmidi, 2023).

In addition, demographic factors such as education level, age, and experience also have an influence. Research results show that education can strengthen normative and moral understanding of paying taxes, while age and experience affect knowledge of tax governance (Lima et al., 2024; Soufiene et al., 2024). The interpersonal relationship between taxpayers and tax officers also contributes to shaping tax morale; The friendly, professional, and fair service of the tax officer will build public trust and strengthen the psychological contract between the treatment received and the willingness to obey.

Empirical evidence demonstrates that tax morality exerts a substantial and favourable influence on tax compliance. Research in various contexts and sectors, including Saprotan, shows that the higher the tax morale that taxpayers have, the higher the level of compliance, both formal and voluntary, also increases (Mat Jusoh et al., 2021; Victory et al., 2023). Tax morality is not only social capital but also helps reduce tax evasion, especially under the self-assessment system. This moral resilience becomes a fortress when weaknesses in external supervision arise, so optimising tax morale through increased trust, education, and fair service is a crucial strategy to improve tax compliance in Indonesia.

### Tax Sanctions

Tax sanctions are actions or punishments imposed on taxpayers who commit violations or fail to fulfil tax obligations, either in the form of administrative sanctions, such as fines and interest, or criminal sanctions for serious violations. Tax sanctions are not only intended as a repressive act but also serve a preventive role by building taxpayer awareness of the risk of violations. Taxpayers' awareness of sanctions' existence and consequences, supported by adequate socialisation and education, is a prerequisite for sanctions prevention and education to be effective (Ebimobowei, 2023a; Sofian & Hasibuan, 2021). The effectiveness of tax sanctions can be seen in their ability to increase taxpayer compliance with reporting and tax payments, with a decrease in violations and an increase in discipline after sanctions are consistently applied (Charviany et al., 2024b; Rahmayanti et al., 2020a). On the other hand, perceptions of fairness strongly determine acceptance and compliance, as sanctions applied proportionately and non-discriminatorily foster trust and active participation in the tax system (Putra, 2020). Taxpayers' understanding of the type, rationale, and procedures for imposing sanctions also supports compliance, as a clear understanding reduces inadvertent errors and increases material compliance. The implementation of sanctions by tax authorities, carried out firmly, transparently, and consistently, determines the effectiveness of this legal apparatus in encouraging compliant behaviour. The relationship between tax sanctions and tax compliance has been positive and significant, with fair, understandable, and consistently

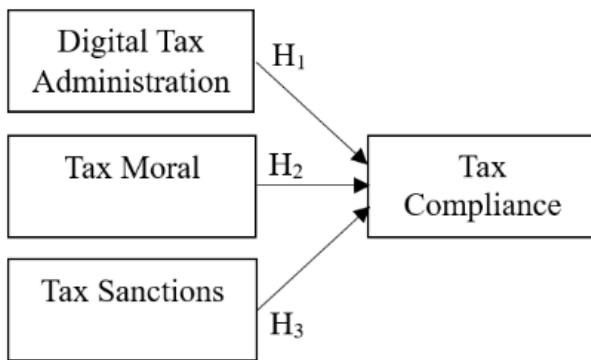


Figure 1. Framework

implemented sanctions increasing taxpayer compliance, both formally and materially. Conversely, if perceptions of fairness and legal certainty regarding sanctions are low, trust in tax authorities decreases and tax compliance is suboptimal (Charviany et al., 2024b; Dare, 2020a).

#### Tax Compliance

Tax compliance arises when taxpayers fully meet their tax duties and assert their rights as stipulated by prevailing tax legislation and regulations. Tax compliance means that taxpayers are not only administratively and formally compliant, but also show awareness, honesty, and accuracy in every tax reporting and payment process (Laporan Tahunan DJP, 2024). In general, researchers analyse tax compliance indicators across several critical dimensions, namely formal administrative compliance (e.g., registration as a taxpayer and reporting of tax returns in an orderly manner), awareness in carrying out tax obligations driven by voluntary understanding and motivation, timeliness and honesty in reporting tax data and documents, suitability of tax payments according to the amount owed, and compliance with the current national tax system Self-Assessment-Based. (Firmansyah et al., 2025) showed that organisational factors, such as organisational readiness and managerial support, play a significant role in the adoption of digital transformation. This finding is relevant to the agricultural sector in Indonesia, where technological understanding and readiness for digital adaptation are crucial to improving tax compliance. Taxpayer compliance is very closely related to the tax administration system. Modernisation and digitalisation of tax administration, such as the implementation of e-filing, e-SPT, and Coretax, accelerate access to services, increase efficiency and transparency, and reduce administrative burdens for taxpayers and tax authorities (Sibarani et al., 2024b). Empirical research shows that ease of access to digital systems not only encourages increased reporting and timely payments but also fosters satisfaction and trust in authorities, thereby having positive implications for formal and material compliance.

In addition to the system aspect, tax compliance is also greatly influenced by tax morals, which are intrinsic motivations and beliefs that encourage individuals or business entities to comply with tax provisions voluntarily. Taxpayers demonstrate tax morality through a conscious, honest, and willing attitude toward paying taxes, which is strongly influenced by their trust in the government, the transparency of tax utilisation, educational programmes, and their own experiences as taxpayers (Mat Jusoh et al., 2021). If the moral tax level is high, tax reporting and payment tend to be carried out more orderly and in accordance with the applicable system (Soufiene et al., 2024).

On the other hand, research shows that perceptions of tax sanctions also significantly influence taxpayer compliance. Strict, proportionate, and fairly applied sanctions build a

deterrent effect for rule violators, while improving the discipline of reporting and paying taxes, especially in the informal sector and MSMEs (Charviany et al., 2024b; Ebimobowei, 2023a; Gulzar et al., 2024a). However, if authorities enforce sanctions inconsistently or discriminatorily, they can compromise the legitimacy of the tax authority and thereby negatively affect tax compliance.

Thus, we measure tax compliance through formal administrative indicators, awareness, reporting, payment suitability, and the tax system, all of which strongly influenced by the combined effects of digital tax administration quality, the level of tax morality, and perceptions of the sanctions applied. The optimal synergy among these three factors will foster the development of a healthy, modern, and equitable tax ecosystem for all taxpayers in Indonesia.

Framework of thought and hypothesis development:

Hypothesis Development (figure 1):

H1: There is an influence of Digital Tax Administration on Tax Compliance

H2: There is an Influence of Tax Morality on Tax Compliance

H3: There is an Influence of Tax Sanctions on Tax Compliance

## Method

#### Population and Sample

Adopting a quantitative research design, this study utilizes survey data collected through a structured questionnaire distributed to all identified saprotan businesses in several regions on the island of Java, yielding 97 valid responses from owners or directors who make tax-related decisions.

#### Research Instruments

The main instrument used was a structured questionnaire based on variable indicators focused on the Digital Tax Administration System, Moral Tax Perception, Tax Sanction Perception, and Taxpayer Compliance. The measurement scale is Likert-type.

#### Data Analysis Techniques

To test the proposed hypotheses in the simple models with direct effects, we used SmartPLS 3 software, which supports the assessment of validity, reliability, discriminant validity, as well as key metrics such as  $R^2$  (R-square),  $Q^2$  (Q-square), SRMR (Standardized Root Mean Square Residual), and hypothesis testing (Muhson, 2022).

## Result and Discussion

#### Profile of Survey Participants

This study engaged 97 business actors within Indonesia's agricultural production facilities sector. The majority of respondents were male (64%), reflecting the prevailing dominance of men in agribusiness management and decision-making. In terms of age distribution, most participants were in productive and experienced groups: 41% were aged 36–45 years and 30% were aged 45+, while individuals under 25 accounted for only 3%. Regarding business structure, 58% operated as sole Perseorangan, whereas legal entities such as Perusahaan Terbatas (PT) (27%), partnerships (CV) (13%), and Koperasi (2%) remained relatively uncommon. Concerning business longevity, 43% had been operating for 1–5 years, 35% for more than a decade, and only 2% for less than one year, indicating a high level of business sustainability (see table 2). Overall, these characteristics underscore the predominance of men of productive age, individually managed enterprises, and substantial business experience, providing a critical foundation for designing tax awareness programmes, digital

**Table 2.** Profile of Survey Participants

Profile	Participants	Percentage (%)
Gender		
Man	62	64
Woman	35	36
Age		
< 25 years	3	3
25 – 35 years old	25	26
36 – 45 years old	40	41
> 45 years old	29	30
Type of Business		
Perseorangan	56	58
Perseroan Terbatas	26	27
CV	13	13
Koperasi	2	2
Firm Age		
< 1 year	2	2
1-5 years	42	43
6-10 years	34	35
>10 years	19	20

Source: Author

education initiatives, and policies to enhance tax compliance in this sector.

#### Validity & Reliability Test

The outer loading and Average Variance Extracted (AVE) values indicate adequate convergent validity. An ideal outer loading should exceed 0.70, signifying that each indicator is strongly correlated with its respective latent construct. As shown in the [table 3](#), most indicators exhibit outer loadings above the recommended threshold of 0.70, with the exception of the “Formal Administration” indicator, which records a value of 0.674. This value remains acceptable in accordance with ([Hair et al., 2017](#)), as the associated construct demonstrates satisfactory composite reliability and convergent validity. Furthermore, all constructs exhibit AVE values exceeding 0.50, indicating that more than 50 per cent of the variance in the indicators is explained by the latent constructs, thereby confirming convergent validity.

Reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), which are the two primary indicators of internal consistency. Although the conventional threshold for Cronbach's Alpha is 0.70, the results confirm that all constructs meet the recommended criteria, with outer loadings generally above 0.70, AVE values greater than 0.50, Cronbach's Alpha coefficients exceeding 0.70, and Composite Reliability values above 0.70. These findings provide assurance that the measurement instrument is internally consistent and sufficiently reliable in capturing the intended constructs.

#### Discriminant Validity Test

The results of the discriminant validity assessment using cross loadings indicate that each indicator demonstrates its highest loading on the construct it is intended to measure compared with other constructs. The indicators of Tax Compliance, Tax Morale, Tax Sanctions, and the Digital Tax Administration System consistently load more strongly on their respective constructs, despite the presence of some relatively high cross loadings (see [table 4](#)). This pattern reflects the conceptual relatedness among the constructs while still indicating that each latent variable is empirically distinguishable. Accordingly, these results confirm that the model satisfies discriminant validity and that the constructs are related yet remain measurement-wise distinct.

#### R<sup>2</sup> (R-Square)

[Table 5](#) presents the R<sup>2</sup> and adjusted R<sup>2</sup> values for tax compliance as 0.890 and 0.887, respectively. The coefficient of determination (R<sup>2</sup>) reveals that the independent variables account for 89% of the variation in tax compliance. The R-square value for Tax Compliance indicates that the proposed model explains a substantial proportion of variance in the dependent variable within the observed sample. Nevertheless, this level of explained variance should be interpreted cautiously. Within the PLS-SEM framework, a high R-square primarily reflects the model's in-sample explanatory capacity and does not, by itself, imply strong substantive validity, predictive accuracy, or generalisability beyond the specific sector and sample examined in this study.

Although the measurement model demonstrates acceptable validity and reliability, the possibility of common method bias cannot be fully eliminated. The cross-sectional design may inflate observed relationships among constructs, particularly in models that include conceptually related behavioural and institutional variables. Accordingly, the R-square result should not be interpreted as evidence of strong causal adequacy or substantive reliability of the model.

#### Goodness of fit (Q<sup>2</sup> and SRMR)

Based on the Q<sup>2</sup> (Construct Cross-validated Communality and Redundancy) calculation, all constructs in the model have positive Q<sup>2</sup> values ranging from 0.558 to 0.640. It indicates that the model has strong predictive relevance, with adequate ability to predict indicators and constructs. Specifically, the Tax Compliance construct recorded the highest value (CCC = 0.600; CCR = 0.640), indicating robust predictive capability, while other constructs, such as Tax Moral (0.558), Tax Sanctions (0.574), and Digital Tax Administration System (0.611), also demonstrate good predictive power. Meanwhile, the SRMR values for the saturated and estimated models stand at 0.075, which is below the 0.08 threshold and thus indicates an acceptable degree of model fit. While predictive relevance (Q<sup>2</sup>) and an acceptable SRMR indicate that the model performs adequately within the sample, they do not eliminate potential concerns related to construct overlap or common method bias. Accordingly, the findings should be viewed as context-specific and indicative rather than conclusive, underscoring the need for future studies employing longitudinal designs, multi-source data, or additional bias-control techniques to further assess the robustness of the proposed relationships (see [table 6](#)).

#### Direct Influence

Hypothesis testing was conducted to examine whether the independent variables are significantly associated with the dependent variable in the proposed research model. As shown in [Table 7](#), the results indicate that tax morality is positively and significantly associated with tax compliance, as reflected by a path coefficient of 0.289, a t-statistic of 2.378, and a p-value of 0.018. In addition, tax sanctions show the strongest positive association with tax compliance, with a path coefficient of 0.377, a t-statistic of 4.301, and a p-value of 0.000. The digital tax administration system is also positively and significantly associated with tax compliance, as indicated by a coefficient of 0.326, a t-statistic of 3.043, and a p-value of 0.002. Overall, the t-statistics exceeding 1.96 and p-values below 0.05 suggest that these variables are significantly and positively associated with taxpayer compliance within the studied sample.

#### The Influence of the Digital Tax Administration System on Tax Compliance

This finding suggests that the better the implementation of the digital tax system, the higher the level of tax compliance among entities in the agricultural production facilities sector. In theory, these findings are consistent with the Technology

**Table 3. Validity & Reliability Result**

Variable	Indicator	Statement	Outer Loading	Alpha	Composite Reliability	Average Variance Extracted (AVE)
Digital Tax Administration System	Utilisation of Official Access	Access digital tax information through the DGT's official website, which can be accessed anytime and anywhere	0.939	0.903	0.930	0.728
	Technology Reliability	Digital tax services, when used without any significant constraints	0.799			
	Ease of Service	The information in digital tax services is relatively easy to understand	0.850			
	Efficiency	The digital tax reporting process takes less time than manual reporting.	0.823			
	Education	Tax education through the DGT's official digital platform (video, email, or social media).	0.896			
Tax Moral	Demographic Factors	Education level affects compliance in reporting and paying tax obligations	0.839	0.896	0.923	0.707
	Knowledge	As a taxpayer, you know the tax regulations that apply to the business you run	0.932			
	Commitment	Involving other parties in tax reporting to comply with tax obligations	0.755			
	Social Norms	Taxpayers know that other business actors have not carried out their tax obligations properly	0.825			
	Taxpayer's Relationship with Tax Officer	Taxpayers feel comfortable communicating with tax officers directly	0.844			
Tax Sanctions	Awareness	Taxpayers know that there are penalties if they do not report or pay taxes on time	0.914	0.886	0.922	0.747
	Effectiveness	The threat of tax sanctions makes taxpayers more careful in fulfilling their tax obligations	0.912			
	Understanding	Taxpayers know the nominal amount of fines and administrative sanctions that apply	0.866			
	Implimentation	Taxpayers have always been subject to tax sanctions for late reporting or paying tax obligations	0.756			
	Administrative formal	Taxpayers are required to have an NPWP	0.674			
Tax Compliance	Reporting	Reporting tax returns regularly through the applicable tax system	0.921	0.913	0.936	0.744
	Awareness	Calculate tax liabilities independently before reporting.	0.931			
	Payment Compatibility	Taxpayers pay tax obligations based on the amount calculated on the tax return.	0.915			
	Reporting & Understandin	Tax Assessors are assisted by third parties (consultants, friends) in reporting tax returns	0.796			

Source: SmartPLS 3 data processing results

Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use serve as primary drivers of technology adoption (Davis, 1989b). When taxpayers perceive the digital tax system as applicable (speeding up reporting, reducing errors, and enhancing data security) and easy to use, their attitude and intention to use the system increase, ultimately leading to higher

compliance. Incorporating these results into the Technology Acceptance Model (TAM) reveals that perceptions of usefulness and ease of use serve as psychological pathways linking digitalisation's effects to tax compliance. It aligns with prior research by (Wogo et al., 2023) & (Martínez et al., 2022), which state that modernisation of tax administration significantly affects taxpayer compliance, and by

**Table 4. Cross Loadings**

	Tax Compliance	Tax Moral	Tax Sanctions	Digital Tax Administration System
KP1	0.674	0.558	0.588	0.543
KP2	0.921	0.845	0.816	0.868
KP3	0.931	0.890	0.829	0.853
KP4	0.915	0.843	0.830	0.815
KP5	0.796	0.666	0.729	0.695
SD1	0.886	0.905	0.820	0.939
SD2	0.633	0.667	0.628	0.799
SD3	0.752	0.728	0.713	0.850
SD4	0.742	0.687	0.643	0.823
SD5	0.824	0.836	0.756	0.896
SP1	0.827	0.796	0.914	0.736
SP2	0.790	0.742	0.912	0.704
SP3	0.849	0.857	0.866	0.871
SP4	0.596	0.533	0.756	0.513
TM1	0.787	0.839	0.739	0.772
TM2	0.922	0.932	0.863	0.862
TM3	0.590	0.755	0.571	0.695
TM4	0.727	0.825	0.714	0.690
TM5	0.724	0.844	0.688	0.722

Source: SmartPLS 3 data processing results

**Table 5. R-Square**

	R Square	R Square Adjusted
Tax Compliance	0.890	0.887

Source: SmartPLS 3 data processing results

(Sibarani et al., 2024), which shows that digital tax systems improve efficiency and transparency, thereby strengthening compliance. Research by (Slimani, 2025) & (Abad-Segura et al., 2025) also supports the idea that the digitalisation of tax administration enhances compliance behaviour through perceptions of ease and usefulness. The positive association between the digital tax administration system and tax compliance suggests that digitalisation plays a particularly meaningful role in the saprotan (agricultural production facilities) sector, albeit through context-specific mechanisms. Unlike more formal or urban sectors, businesses in this sector often operate with limited administrative capacity, lower levels of digital literacy, and greater reliance on manual record-keeping. In such conditions, a digital tax system does not merely function as a convenience tool, but as a structural support that helps standardise reporting practices, reduce uncertainty, and lower the cognitive and procedural burden associated with tax obligations. From a Technology Acceptance Model (TAM) perspective, perceived usefulness in this context is closely tied to risk reduction such as minimising reporting errors and ensuring data security rather than efficiency alone, while perceived ease of use becomes critical due to heterogeneous user capabilities.

**The Influence of Tax Morale on Tax Compliance**

This finding confirms that the higher the tax morale of taxpayers, reflected in a sense of responsibility, honesty, and awareness that taxes are a contribution to public interest, the greater their adherence to timely and regulation-compliant tax reporting and payment. Drawing on the Theory of Planned Behaviour (TPB), we define tax morale as the extent to which individuals hold attitudes toward the behaviour, subjective norms, and perceived behavioural control (Ajzen, 1991). Taxpayers with high tax morale tend to view paying taxes as a positive and valuable behaviour (attitude), feel that their social environment supports compliance (subjective norms),

**Table 6. Goodness of fit**

and believe they can fulfil tax obligations with the resources they have (behavioural control). Thus, this result provides a theoretical contribution by showing that tax morale is a psychological antecedent that reinforces behavioural intention to comply, as formulated in TPB. Empirically, this finding is consistent with (Pratama & Muhammad, 2025), who found that tax morale significantly affects compliance, and (Mat Jusoh et al., 2021), who demonstrated that knowledge, tax complexity, and tax morale significantly influence compliance. (Victory et al., 2023) also show that tax morale strengthens the relationship between tax compliance and economic growth, confirming that high tax morale not only improves compliance but also supports macroeconomic performance, (Abdi & Hersi, 2023) also show that Tax morale is a determinant of compliance at the individual level and is considered a "social contract" between citizens and the government. However, this finding should be interpreted cautiously, as both tax morale and compliance are measured through self-reported perceptions and represent conceptually close constructs. This proximity may inflate the observed association, as respondents who perceive themselves as morally committed to taxation may also be more inclined to report compliant behaviour, irrespective of actual practice. This implies that policy interventions centred on education, transparency, and trust-building may reinforce the moral framing of compliance, while future research using behavioural data or longitudinal designs is needed to disentangle moral disposition from reported compliance outcomes.

**The Influence of Tax Sanctions on Tax Compliance**

The findings indicate that perceptions of tax sanctions particularly with regard to their certainty, firmness, and perceived fairness are strongly associated with tax compliance within the observed sample. Consistent with Deterrence Theory, this suggests that taxpayers are less likely to engage in non-compliant behaviour when sanctions are perceived as credible and consistently enforced; however, this relationship should be interpreted within the specific context of the study rather than as a universal pattern. Empirically, these results align with previous studies that report a positive association between tax sanctions and compliance, highlighting the role of fines, audits, and enforcement fairness in encouraging compliance among small and medium-sized enterprises

	Q <sup>2</sup> (=1-SSE/SSO) CCC	Q <sup>2</sup> (=1-SSE/SSO) CCR	Saturated Model	Estimated Model
Tax Compliance	0.600	0.640		
Tax Moral	0.558			
Tax Sanctions	0.574			
Digital Tax Administration System	0.611			
SRMR			0.075	0.075

Source: SmartPLS 3 data processing results

**Table 7. Direct Influence Result**

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Result
Tax Moral-> Tax Compliance	0.289	0.286	0.121	2.378	0.018	Accepted
Tax Sanctions -> Tax Compliance	0.377	0.374	0.088	4.301	0.000	Accepted
Digital Tax Administration System-> Tax Compliance	0.326	0.331	0.107	3.043	0.002	Accepted

Source: SmartPLS 3 data processing results

(Dare, 2020b; Ebimobowei, 2023b; Gulzar et al., 2024b; Rahmayanti et al., 2020b; Wogo et al., 2023b). In the context of agricultural production facilities, where administrative practices may be less formalised and monitoring less intensive, sanctions may become more salient as behavioural reference points. Interview evidence indicating that “without sanctions, many taxpayers would violate” suggests that sanctions function not only as deterrent mechanisms but also as signals of institutional seriousness and fairness. Conceptually, this finding complements the contributions of the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB) discussed earlier by demonstrating that, alongside internal motivations such as tax morale and perceived system usefulness, external enforcement mechanisms remain highly relevant in shaping compliance behaviour in this sector. Nevertheless, given the cross-sectional and self-reported nature of the data, the relative strength of sanctions should be understood as context-dependent and should not be generalised beyond the observed sector without further empirical validation.

## Conclusion

This study examines the associations between the digital tax administration system, tax morale, tax sanctions, and taxpayer compliance among business entities in Indonesia’s agricultural production facilities sector. The results indicate that these factors are positively and significantly related to tax compliance within the observed sample, suggesting that compliance behaviour is shaped by a combination of technological conditions, internal motivations, and perceived deterrence, rather than by a single dominant factor.

From a theoretical perspective, the results are consistent with the Technology Acceptance Model (TAM), as more favourable perceptions of the usefulness and ease of use of digital tax systems are associated with higher levels of compliance. The findings also align with the Theory of Planned Behaviour (TPB), highlighting the role of tax morale reflecting attitudes, subjective norms, and perceived behavioural control in shaping taxpayers’ willingness to comply voluntarily.

In addition, the observed relationship between tax sanctions and compliance is consistent with Deterrence Theory, which emphasises the role of perceived sanctions as an external control mechanism that discourages non-compliant behaviour. In this sense, tax sanctions complement internal motivations and technological conditions by strengthening behavioural control, without

implying deterministic or automatic causal effects.

Accordingly, the contribution of this study is primarily contextual and empirical, offering sector-specific insights from an agricultural setting that remains under-represented in the tax compliance literature. The relatively strong association observed for tax sanctions is likely influenced by the characteristics of the studied sector, where administrative practices tend to be less formalised and enforcement signals therefore become more salient in shaping compliance behaviour. While the findings provide indicative implications for digitalisation, taxpayer education, and enforcement strategies, they should not be interpreted as direct policy prescriptions. This study is subject to several limitations, including its cross-sectional design, a relatively modest sample size, and the absence of additional control variables such as firm characteristics or levels of digital literacy, which may moderate the observed relationships.

Future research should test the robustness of the proposed model using larger and more diverse samples, incorporate longitudinal or comparative sectoral designs, and include additional explanatory variables before drawing broader policy implications.

## Author contributions

Fitri Yulianti contributed to the formulation of the research idea, development of the conceptual framework, data collection, and drafting of the initial manuscript. Agustin Fadjarenie contributed to the research methodology design, data analysis and interpretation, and critical revision of the manuscript. All authors have read and approved the final version of the manuscript

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## Conflict of interest

The authors declare that there are no financial or non-financial conflicts of interest that could have influenced the research process, data analysis, interpretation of the findings, or the preparation of this manuscript.

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