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Tax Literacy as a Moderator of the Effects of Digitalization, Tax Socialization, and Tax Sanctions on Taxpayer Compliance

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Abstract. *This study aims to analyze the role of tax literacy in moderating the effects of digitalization, socialization, and sanctions on tax compliance among Micro, Small, and Medium Enterprises (MSMEs) in the Greater Jakarta area. This study employs a quantitative approach using primary data obtained through a questionnaire. The sampling technique used purposive sampling with a total of 167 MSME operator respondents. Data analysis was conducted using the Structural Equation Modeling-Partial Least Square (SEM-PLS) method with SmartPLS 4.0.9.9 software. The results indicate that digitalization, public awareness campaigns, and sanctions have a positive and significant effect on MSME tax compliance. Furthermore, tax literacy was found to positively moderate (strengthen) the influence of digitalization, outreach, and sanctions on SME tax compliance. These findings indicate that improved tax compliance is not only influenced by adequate systems, the intensity of outreach, and the strictness of sanctions, but is also crucially reinforced by the level of taxpayers' tax literacy.*

Keywords: digitalization, outreach, sanctions, tax literacy, tax compliance.

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are the main pillar of Indonesia's national economy. Data from the Ministry of Cooperatives and MSMEs shows that this sector contributes more than 61% to the Gross Domestic Product (GDP) and accounts for up to 97% of the national workforce (Sagita et al., 2025). The magnitude of this economic contribution makes the MSME sector highly strategic for enhancing the country's fiscal capacity (Latuheru & Loupatty, 2024). However, a disparity exists where the cumulative tax contribution from MSMEs ranges only between 0.5% and 1.1% of total national tax revenue This situation is exacerbated by a drastic downward trend in the annual tax return (SPT) filing compliance rate in 2024 for the Non-Employee Individual Taxpayers (WPOP) group (Direktorat Jenderal Pajak, 2024), as presented below:

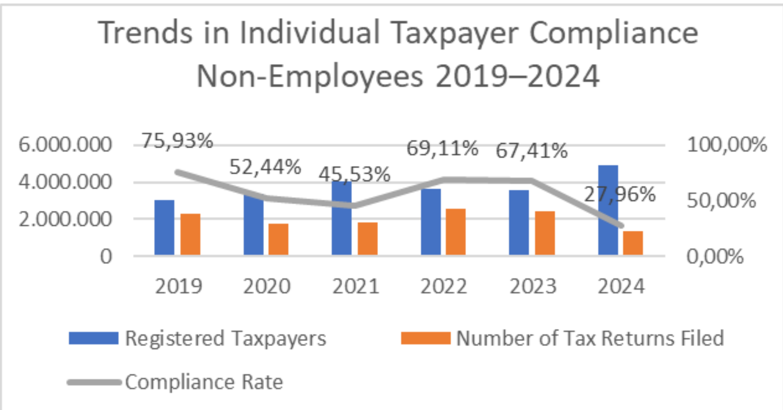

Figure 1: Taxpayer Compliance Trends
Source: (Laporan Tahunan Direktorat Jenderal Pajak, 2024)

Referring to **FIGURE 1**, the tax return filing compliance rate for non-employee individual taxpayers shows a highly fluctuating trend and experienced the most drastic decline in 2024, dropping to 27.96% (Laporan Tahunan Direktorat Jenderal Pajak, 2024). This concerning situation apparently does not only occur among individual taxpayers but has also spread to business entities classified as small-scale corporate taxpayers (SMEs), as illustrated in **FIGURE 2** below:

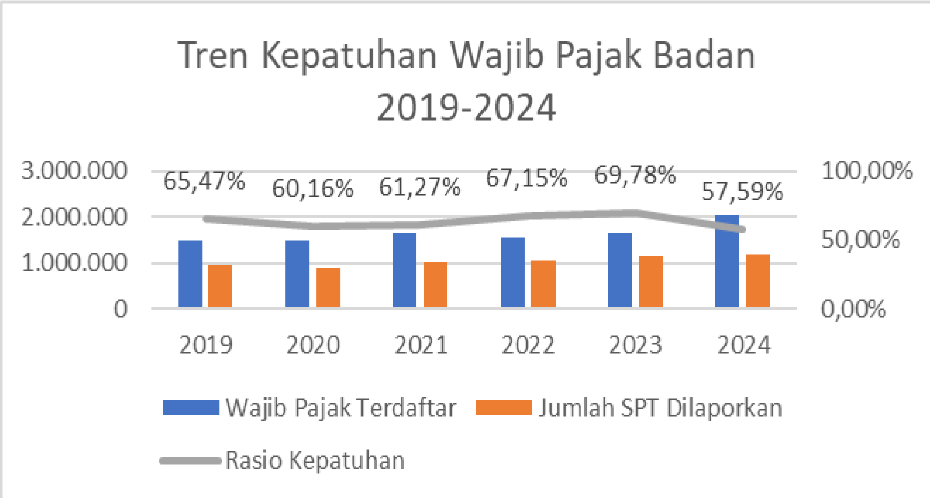

Figure 2: Taxpayer Compliance Trends
Source: (Laporan Tahunan Direktorat Jenderal Pajak, 2024)

Referring to Figure 1.2, the compliance rate of corporate taxpayers also shows an unstable trend, with a sharp decline in 2024 reaching 57.49% (Laporan Tahunan Direktorat Jenderal Pajak, 2024). The simultaneous decline in both MSME groups underscores that compliance with annual tax return filing remains a fundamental and critical issue. This reality underscores the urgency of reassessing the effectiveness of compliance-promoting instruments, particularly regarding digitalization initiatives, public awareness programs, enforcement of penalties, and the extent to which tax literacy moderates the formation of compliant taxpayer behavior.

The government is striving to boost compliance through various instruments. First, tax digitalization reform. Currently, digital transformation is no longer focused solely on single applications (such as *e-Filing* or *e-Billing*), but has evolved into an *omnichannel taxation* ecosystem that consistently integrates various service channels to facilitate *real-time* calculation, reporting, and notification processes (Erasashanti et al., 2025). Second, tax awareness programs. This step is essential for conveying an understanding of rights, obligations, and reporting procedures. However, the effectiveness of such awareness campaigns often has no significant impact without being accompanied by internal cognitive awareness on the part of the taxpayers themselves (Erasashanti, Cahaya, et al., 2024). Third, the enforcement of administrative and criminal sanctions. Tax sanctions are positioned as preventive and control measures to provide *a* deterrence *effect* so that taxpayers do not repeat violations (Erasashanti, Cahaya, et al., 2024).

However, a deeper review of the literature reveals a critical research gap characterized by persistent contradictions in emerging-market compliance studies. While several studies indicate that digitalization, institutional outreach, and legal sanctions successfully enhance compliance (Cynthia & Trisnawati, 2024; Permata, 2025; Sugiyono et al., 2024), others document highly insignificant outcomes

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(Afriani et al., 2022; Andreansyah & Farina, 2022; Napisah & Khuluqi, 2022). This study addresses these theoretical friction points by introducing a specific configuration of literacy-driven interaction effects, establishing a clear departure from conventional, static compliance models. Within emerging economies, external compliance instruments do not operate in a psychological vacuum. By positioning tax literacy as a dynamic contingency variable, this model explicitly accounts for how conflicting behavioral responses to fiscal policies are resolved when taxpayers possess the internal cognitive capacity to interpret administrative updates. This configuration is exceptionally critical during Indonesia's current transitional fiscal phase toward the Coretax Administration System under PMK 81/2024, where the ultimate efficacy of macro-structural reforms depends heavily on the end-user's conceptual literacy.

The selection of tax literacy as a moderating variable has a strong theoretical foundation through the *Theory of Planned Behavior* (TPB) developed by (Ajzen, 2011). Within the TPB framework, tax literacy represents the foundation of *perceived behavioral control*. Taxpayers who are "tax-literate" possess higher levels of belief and ability to translate external stimuli into a genuine intention to comply (Ajzen, 2011), that the DGT is currently in a critical transition period for the implementation *of Coretax* as mandated by PMK 81/2024, this digital transformation of taxation is expected to move the tax ecosystem beyond mere *enforced compliance* toward sustainable fiscal harmony (Erasashanti et al., 2025). Therefore, an evaluation of the extent to which literacy levels can enhance the effectiveness of tax policies in digital economic hubs such as the Jakarta-Bogor-Depok-Tangerang-Bekasi (Jabodetabek) region is highly relevant and urgently needs to be researched.

LITERATURE REVIEW

The Theory of Planned Behavior (TPB) posits that human actions are driven by behavioral intentions, which are co-determined by attitude toward behavior, subjective norms, and perceived behavioral control (PBC) (Ajzen, 2011). Moving beyond descriptive variable definitions, this study integrates these dimensions into a cohesive psychological framework where internal cognitive qualities alter external stimulus pathways. Authority-led socialization works by converting structural tax data into positive attitudes and active subjective norms within the business environment, while tax sanctions establish restrictive normative pressures by clarifying the legal risks of non-compliance. Concurrently, tax digitalization directly alters the objective ease of tax administration, thereby modifying the taxpayer's external PBC. Crucially, tax literacy acts as the internal cognitive catalyst within this pathway. It serves as a cognitive gatekeeper that alters how these external stimuli are processed; high internal literacy empowers taxpayers to translate complex technical jargon from socialization programs, navigate modern digital interfaces independently, and rationally calculate the severe cash-flow implications of legal penalties. Consequently, tax literacy actively modifies and strengthens the psychological pathways leading from external administrative actions to actual compliant behavior.

Tax compliance in a *self-assessment* system is not merely passive understanding but rather the manifestation of taxpayers' proactive actions in registering, calculating, paying, and reporting their taxes honestly, accurately, and on time without coercion (Wicaksono & Widarjo, 2025). Taxpayer compliance activities are stimulated by external instruments designed by fiscal authorities, which in this study are represented by three main independent variables:

Tax digitalization refers to the *real-time* modernization of administrative systems to simplify reporting procedures while reducing *compliance* costs for businesses (Bellon et al., 2022). Furthermore, the current digital transformation demands *omnichannel* integration that facilitates integrated tax administration, reporting, and oversight across platforms (Erasashanti et al., 2025). This optimal digital transformation theoretically not only facilitates the transformation of taxpayers' intent to comply into concrete action but also shifts the paradigm from fear-based *compliance* (*enforced compliance*) to sustainable voluntary compliance (Erasashanti et al., 2025).

Proceedings of the Perbanas International Seminar on Economics, Business, Management, Accounting and IT
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Tax outreach serves as a structured educational mechanism by the authorities to convey the latest regulatory information and policies to the public. This persuasive communication effort is essential for fostering affective and cognitive changes in business entities, enabling them to fully understand their rights and obligations and recognize the importance of tax contributions. However, the government's outreach efforts will not be fully effective without taxpayers' cognitive awareness to process this information (Erasashanti, Cahaya, et al., 2024).

Tax sanctions are a state coercive instrument legally regulated (Tax Administration Law) to strictly enforce action against any form of administrative or criminal violation. The application of these firm and consistent sanctions aims to create *a deterrence effect* by instilling a rational fear in taxpayers regarding financial losses that could disrupt their business cash flow in the future (Marilyn et al., 2022). These sanctions essentially serve as a preventive control measure to ensure taxpayers do not repeat their violations (Erasashanti, Cahaya, et al., 2024).

Tax literacy is defined as an individual's level of ability and proficiency in understanding, analyzing, and applying legal information and technical tax procedures in their business decision-making (De Clercq, 2023). This study positions tax literacy as a contingency variable or cognitive catalyst for taxpayers.

Empirically, innovations in the digitization of administrative systems will not be able to optimally drive increased compliance if users' technological adoption capacity (*user capability*) remains low (Imanda et al., 2025). Similarly, regarding outreach programs; the educational materials presented by tax officials require literacy as a cognitive bridge so that complex legal terms can be translated into compliant operational actions (Maulida et al., 2026). Furthermore, legal sanctions will not provide an effective deterrence effect if taxpayers fail to understand the nature of their errors and the logical consequences of their non-compliance (Erasashanti et al., 2024).

Based on the theoretical review and empirical study presented, the hypotheses proposed in this research are:

1. **H1:** Digitalization has a positive and significant effect on MSME tax compliance.
2. **H2:** Socialization has a positive and significant effect on MSME tax compliance.
3. **H3:** Sanctions have a positive and significant effect on MSME tax compliance.
4. **H4:** Tax literacy moderates (strengthens) the effect of digitalization on tax compliance.
5. **H5:** Tax literacy moderates (strengthens) the effect of public awareness campaigns on tax compliance.
6. **H6:** Tax literacy moderates (strengthens) the effect of sanctions on tax compliance.

METHODS

This study employs a quantitative approach using a causal-explanatory design (Creswell & Creswell, 2023). The unit of analysis is Micro, Small, and Medium Enterprises (MSMEs) that are domiciled and actively conduct their business operations in the Jabodetabek metropolitan area (Jakarta, Bogor, Depok, Tangerang, and Bekasi). The selection of this region was not random but based on the maturity level of its digital ecosystem. According to the 2024 *E-Commerce* Survey, the regions of DKI Jakarta, West Java, and Banten collectively recorded more than 1.2 million *e-commerce* businesses, with 41.51% of these businesses actively engaging in online buying and selling (Badan Pusat Statistik Indonesia, 2025).

Proceedings of the Perbanas International Seminar on Economics, Business, Management, Accounting and IT
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Figure 3: Highest MSME's Competitiveness Index
Source: (Goodstats, 2025)

Referring to **FIGURE 3**, states that DKI Jakarta leads with the highest score (78.4), followed by West Java (61.9) and Banten (55.5) (Badan Pusat Statistik Indonesia, 2025). The high level of digital competitiveness in the capital simultaneously generates *a spillover effect* of technology to its surrounding regions. This massive utilization of digital infrastructure makes the Jabodetabek population highly representative and valid as an observation unit for testing the effectiveness of tax digitalization instruments.

Sampling was conducted using a non-probability purposive sampling technique (Creswell & Creswell, 2023). While the macro-population of digital micro-enterprises across the Jabodetabek region is vast, exceeding 1.2 million units (Badan Pusat Statistik Indonesia, 2025), this specific cohort of 167 respondents is methodologically robust and statistically adequate for the exploratory nature of the proposed interaction models. First, strict purposive screening criteria were applied to narrow down the broad population into highly relevant target respondents, requiring participants to be active MSME operators officially holding a Taxpayer Identification Number (NPWP) with verified operational exposure to digital tax portals and institutional awareness programs. Second, for structural equation modeling via PLS-SEM, this sample size comfortably complies with the strict criteria of the '10-times rule' (Hair et al., 2022). The primary endogenous target construct (Tax Compliance) receives a maximum of 6 structural paths (3 direct policy instruments and 3 interaction terms). According to this rule, the absolute minimum sample boundary required is $10 \times 6 = 60$ respondents. Our final sample of 167 strictly screened, qualified respondents significantly exceeds this threshold, providing high statistical power and model stability to evaluate complex moderation and interaction effects without requiring an unnecessarily inflated macro-sample.

Data analysis was performed using SmartPLS 4.0.9.9 software. The analysis included an evaluation of the measurement model (*Outer Model*) to assess the validity and reliability of the instruments, as well as an evaluation of the structural model (*Inner Model*) to examine the coefficient of determination (R-square), effect size (F-square), the goodness-of-fit test (SRMR), and hypothesis testing (direct effects and moderation of interactions) at a 5% significance level using the *bootstrapping* method (5,000 subsamples).

RESULTS AND DISCUSSION

Respondent Profile

This study involved a total of 167 MSME taxpayers as respondents. The demographic profile reveals that the majority of these MSME owners were women (60.5%), fell within the productive age group of 21–30 years (57.5%), and held a bachelor's degree (58.7%). The most dominant business location was Jakarta (32.9%), primarily engaged in the culinary sector (33.5%). Furthermore, the majority of these businesses had been operating for 1–5 years (59.3%). Nearly all respondents demonstrated highly adequate exposure to the taxation ecosystem, with 99.4% having used digital tax services and 97.6% having attended socialization programs organized by the tax authorities.

Evaluation of the Measurement Model (Outer Model)

All instruments were found to have convergent validity, as the *outer loadings* for each indicator were greater than 0.70. Discriminant validity was also established, with no evidence of measurement overlap, as evidenced by the *Heterotrait-Monotrait* (HTMT) ratio, which was well below the threshold of 0.90 (the highest correlation was only 0.568). Furthermore, the construct was confirmed to possess robust internal validity and consistency. As presented in Table 1, the *Average Variance Extracted* (AVE) values for all variables were above 0.50, and Cronbach's *Alpha* and *Composite Reliability* values consistently remained above the 0.70 threshold.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted
Tax Digitalization	0.923	0.931	0.935	0.617
Tax Compliance	0.936	0.938	0.945	0.609
Tax Literacy	0.864	0.869	0.898	0.595
Tax Penalties	0.887	0.894	0.914	0.639
Tax Outreach	0.894	0.902	0.916	0.610

Evaluation of the Evaluation (Inner Model)

After the measurement model was found to meet the criteria, a structural model evaluation was conducted to test the validity of the predictive model. The test results showed that this model is free from multicollinearity issues because all *Variance Inflation Factor* (VIF) values are below 5 (the highest being 2.657 for the tax literacy variable). *The* model also demonstrated an excellent level of *fit*, with a *Standardized Root Mean Square Residual* (SRMR) value of 0.064, which is below the threshold of 0.10. The *R-square* value obtained for the Tax Compliance variable is 0.552. This indicates that the variation in digitization, outreach, sanctions, and the moderating effect of tax literacy in this model explains 55.2% of the variation in MSME tax compliance behavior (moderate category), while the remaining 44.8% is explained by other factors outside the research model.

Hypothesis Testing and Tactical Discussion

Hypothesis testing was conducted using the *bootstrapping* procedure to assess the significance of the paths through *t-statistic* and *p-value* values. A summary of the structural estimation results is presented in Table 2 below:

TABLE 2. Hypothesis Testing Results (Path Coefficients)

Path	*Original Sample*	*T-Statistic*	*P-Value*	Notes
Digitalization →Tax Compliance	0.266	4.134	0.000	Hypothesis Accepted
Socialization →Tax Compliance	0.410	7.846	0.000	Hypothesis Accepted
Sanctions →Tax Compliance	0.371	6.683	0.000	Hypothesis Accepted
Tax Compliance→Tax Literacy	0.235	3.302	0.001	Hypothesis Accepted
X1*Z→Tax Compliance	0.165	2.749	0.006	Hypothesis Hypothesis Accepted
X2*Z→Tax Compliance	0.246	5.783	0.000	Hypothesis Accepted
X3*Z→Tax Compliance	0.130	2.830	0.005	Hypothesis Accepted

Based on Table 2, all research hypotheses proposed in this study are empirically supported. The following is an in-depth interpretation and discussion:

1. **External Influences (Digitalization, Socialization, and Sanctions):** All three tax authority policy instruments were found to have a positive and significant effect on compliance.

    a. **Digitalization (H1):** Digitalization provides a significant procedural boost, with a path coefficient of 0.266. This finding strongly aligns with previous studies (Bellon et al., 2022; Do et al., 2022), which confirm that the adoption of digital tax systems effectively reduces administrative costs and facilitates compliance for MSMEs. Furthermore, this is in line with the omnichannel taxation framework proposed by (Erasashanti et al., 2025), *real-time* integrated digital administrative transformation has proven to help taxpayers mitigate the risk of data entry errors. Although some studies suggest otherwise, such as (Andreansyah & Farina, 2022), such insignificance is typically influenced by the level of technological readiness in specific regions, which does not pose a significant obstacle for SMEs in the Jabodetabek metropolitan area.

    The high acceptance of the procedural ease of this digitalization is quite logical given the demographic profile of the respondents, which is dominated by the young age group (21–30 years old) at 57.5%. The characteristics of these *digital native* taxpayers explain why the exposure rate to digital tax services in the Jabodetabek region reaches a near-perfect figure of 99.4%. However, drawing upon the findings of (Erasashanti et al., 2025), the effectiveness of this digitalization will be far more meaningful if technical barriers in the field can be fully eliminated to enhance taxpayers' operational convenience.

    b. **Socialization (H2):** Socialization emerged as the strongest driver with a path coefficient of 0.410. This demonstrates that proactive communication by authorities has a significant impact on business entities. These results align with research (Permata, 2025; Wardani & Sari, 2025), which confirms that tax education can significantly foster awareness and a compliant attitude. Furthermore, this educational communication approach reinforces the empirical research from (Erasashanti et al., 2024), which confirms that the provision of regular informational guidance can instill the functional understanding that underpins taxpayers' willingness to contribute to the state.

    An evaluation of the structural model reveals a distinct imbalance in driving forces, where digitalization exhibits a small (f^2 = 0.106). compared to the moderate effect size of public socialization (f^2 = 0.349). An institutional analysis of the Directorate General of Taxes (DGT) framework explains this variance. The DGT is currently in a critical operational transition period, shifting toward the nationwide implementation of the Coretax Administration System (CTAS) as mandated by PMK 81/2024. While the macro-digital architecture is advanced, actual field execution faces technical friction. This is confirmed by empirical feedback from respondents, where the indicator for 24-hour server access reliability received the lowest score (mean 3.473), revealing that system downtimes and server instability remain active structural bottlenecks for small businesses. Consequently, digital platforms currently serve as passive administrative utilities rather than active behavioral drivers. In stark contrast, proactive, human-centric institutional outreach by tax officers provides direct, real-time guidance that effectively addresses immediate operational uncertainties and bureaucratic anxieties faced by MSME operators. This makes personal socialization a far more dominant psychological force than automated digital infrastructure in triggering compliance intentions during this transitional fiscal phase.

Proceedings of the Perbanas International Seminar on Economics, Business, Management, Accounting and IT
[June 2026] [ISSN 3047-0951]

c. **Sanctions (H3):** Tax sanctions rank as the second strongest factor, yielding a path coefficient of 0.371. This evidence proves that the threat of law enforcement remains highly relevant as a deterrent against non-compliance (*control beliefs*). This finding is consistent with previous research (Cynthia & Trisnawati, 2024; Permata, 2025), strict sanctions compel taxpayers to think rationally and comply in order to avoid financial losses that disrupt business operations (Marilyn et al., 2022). The contribution of tax sanctions as an effective external pressure instrument is also confirmed by an *effect size* (f-square) value of 0.230, which falls into the moderate category.

However, the results of the descriptive analysis reveal a critical finding where the indicator regarding the strictness of enforcing legal sanctions in accordance with regulations has the lowest average value (mean 3.497). This indicates a psychological gap in the field, where some SME operators still perceive that the enforcement of tax sanctions is not yet fully consistent or is even still negotiable. Therefore, in line with the law enforcement argument presented by (Erasashanti et al., 2024), sanctions will only be effective in absolutely disciplining taxpayers if authorities can eliminate such room for compromise through the uniform objectivity and transparency of the system.

2. **The Central Role of Tax Literacy (Research Novelty):** Testing the moderation hypotheses (H4, H5, H6) addresses gaps in previous studies. All *p-values* for interaction effects are significant (< 0.05) with positive path coefficients. Empirically, this proves that tax literacy plays an absolute role as a “reinforcing catalyst”:

a. **Moderation in Digitalization (H4):** a path coefficient of 0.165 proves that the ease of the interface in digital tax applications will not be optimal for MSMEs that are unfamiliar with the rules. This reinforces the studies conducted by(Ignatius & Tambun, 2025; Lious et al., 2026), where the sophistication of digital automation features will only lead to a maximum surge in compliance if accompanied by a high level of tax literacy among users. This finding aligns with the *Sustainable Tax Balance* approach in (Erasashanti, Djajanti, et al., 2025), which emphasizes the importance of building taxpayers’ cognitive capacity so they can utilize technological facilities independently and sustainably.

b. **Moderation in Outreach (H5):** This relationship yields the highest reinforcement in the entire model with a coefficient of 0.246. As stated by (Al-Okaily, 2024), information and campaigns from authorities will transform attitudes into actual behavior only when taxpayers possess an adequate cognitive foundation. Tax literacy enables the SME audience to translate complex tax legal language into tactical operational steps for their businesses. This reinforces the theoretical proposition (Erasashanti et al., 2024), that government external outreach requires a cognitive bridge in the form of taxpayers’ internal literacy so that the substance of regulatory messages can be internalized into voluntary compliance actions**.**

c. **Moderation of Sanctions (H6):** proven significant with a path coefficient of 0.130. Sanctions become an empty threat if taxpayers are unaware of the violations they have committed. High literacy sharpens this perception of risk. High literacy sharpens this perception of risk. In line with the findings of(Erasashanti, et al., 2024; Marilyn et al., 2022), literate SMEs will rationally calculate that the costs of non-compliance (administrative/criminal fines) are far more detrimental to their cash flow than paying their obligations on time. This demonstrates full alignment with *the Theory of Planned Behavior,* in which the taxpayer’s internal cognitive capacity plays the primary role in shaping robust compliant behavior.

Proceedings of the Perbanas International Seminar on Economics, Business, Management, Accounting and IT
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CONCLUSIONS

Based on the results of the data analysis and the discussion outlined above, this study yields several definitive empirical conclusions. First, external tax policy instruments comprising digitalization, public outreach, and tax sanctions have been shown to have a partially positive and significant influence on improving tax compliance among SME operators in the Jabodetabek region. Second, the most crucial finding in this study demonstrates that tax literacy consistently acts as a moderating variable that reinforces the influence of digitalization, public awareness campaigns, and tax sanctions on the tax compliance of MSME operators. This underscores that no matter how advanced digital technology systems may be, how intensive educational programs are, or how stringent legal sanctions designed by authorities may be, their effectiveness in practice will still depend on the cognitive capacity and level of tax literacy possessed by taxpayers as end-users.

Limitations

This study is not without certain limitations that warrant consideration. The coefficient of determination (*R-squared*) for this model is 0.552, indicating that 44.8% of the variation in tax compliance is influenced by other factors outside the model that were not analyzed in this study. Additionally, the use of primary data via self-administered questionnaires carries the potential for response bias, as answers are highly dependent on each respondent's subjective perceptions. Another limitation lies in the study's scope, which covers only 167 MSME operators in the Jabodetabek region; consequently, the generalizability of the findings remains limited to other regions with differing levels of digital competitiveness and business ecosystem characteristics.

Theoretical Recommendations

Based on the identified limitations, theoretical recommendations are directed toward academics and future researchers to expand the scope of research, both in terms of geographical coverage and diversification of respondent characteristics, to achieve a broader level of data representation. Future researchers are also advised to explore and incorporate other relevant predictor variables, such as tax awareness, levels of trust in the government, the quality of tax administration services, and tax incentives. Furthermore, it is also recommended to consider the use of mediating variables or the application *of mixed methods* to strengthen quantitative analysis with qualitative findings that can describe taxpayers' psychological reasons and real-life experiences more comprehensively.

Practical Recommendations

Practically, SME operators are advised to continue improving their tax literacy independently and to be more proactive in utilizing the digital ecosystem to minimize the risk of late payment penalties. Meanwhile, for the Directorate General of Taxes (DJP), researchers provide tactical recommendations based on an evaluation of the lowest average score indicators in the field:

1. **Improving *Server* Stability:** Addressing technical challenges in digitalization, the DJP needs to strengthen server stability and schedule *maintenance* of *the Core Tax Administration System* (CTAS) selectively during hours with the lowest data traffic to ensure the system remains reliably accessible 24 hours a day without disrupting SME operational activities.

2. **Benefit-Oriented Outreach:** Fiscal authorities are advised to shift their educational approach from a rigidly procedural one to one that highlights the tangible benefits of taxes for the business sector, such as the allocation of tax revenues for providing specialized financing facilities for SMEs.

3. **Automation of Penalty Enforcement:** To dispel the negative perception that fines are negotiable, the Directorate General of Taxes (DJP) must strengthen the consistency of law

enforcement through the automation of electronic Tax Invoice (STP) issuance to encourage taxpayer compliance.

4. **Provision of an Interactive Tax Calculator:** In response to the weak ability to calculate taxes independently, it is recommended to provide an interactive calculator feature on the official app and optimize the Tax Volunteer program in collaboration with academic institutions to assist with simple bookkeeping.

5. **Automated Early Warning System:** To improve the timeliness of Annual Tax Return (SPT) filing which remains the lowest compliance indicator the DGT needs to implement *an early warning system* based on automated notifications before the filing deadline expires.

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