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Associations of Tax Knowledge, Tax Socialization, and Tax Regulation with MSME Taxpayer Compliance: A Cross-Sectional Survey in Banda Aceh

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Abstract

Taxpayer compliance among Micro, Small, and Medium Enterprises (MSMEs) remains an important issue in Indonesia, with previous studies reporting mixed findings on tax knowledge, tax socialization, and tax regulation. Limited evidence examines these predictors simultaneously among MSMEs in Banda Aceh. This study examines the associations of tax knowledge, tax socialization, tax regulation with MSME taxpayer compliance. A quantitative cross-sectional survey collected primary data through structured questionnaires from 100 eligible MSME respondents selected using purposive sampling. Eligibility required self-reported NPWP ownership, active business status, and prior experience calculating, paying, and reporting taxes. Data were analyzed using multiple linear regression. The regression model was statistically significant, $F(3, 96) = 4.385$, $p = 0.006$, with $R^2 = 0.121$ and adjusted $R^2 = 0.093$. Tax knowledge was positively but not significantly associated with compliance ($B = 0.048$, $\beta = 0.038$, $p = 0.732$). Tax socialization was positively and significantly associated with compliance ($B = 0.400$, $\beta = 0.293$, $p = 0.014$). Tax regulation was positively but not significantly associated with compliance ($B = 0.247$, $\beta = 0.157$, $p = 0.182$). Tax socialization had the largest observed standardized coefficient, but this comparison does not establish a statistically stronger or causal relationship. Given the cross-sectional, purposive, and self-reported design, findings represent adjusted associations within sampled MSMEs, not causal or statistically generalizable effects. This study provides empirical and contextual evidence on taxpayer compliance in Banda Aceh, particularly the mixed association between tax knowledge and compliance. Agency Theory and the Theory of Planned Behavior serve as interpretive perspectives.

KEYWORDS

tax knowledge; tax socialization; tax regulation; msme taxpayer compliance.

Introduction

Tax money is a key way for governments to get funds.It helps them offer important public services, build roads and other facilities, improve schools and hospitals, and run programs that support people in need. The ability to keep tax revenue stable depends a lot on people willingly following their tax duties without being forced. Because of this, making sure people pay taxes properly has become a big issue for governments worldwide, especially in developing countries where taxes are the main way the government gets money (Yani et al., 2023).

In Indonesia, small businesses and medium-sized companies are important for helping the country's economy grow. Besides creating jobs and supporting small business owners, MSMEs play a big role in helping local economies grow and can generate a lot of

Registered MSMEs by District in Banda Aceh (2024)

	District	Registered MSMEs
1	Kuta Alam	6,350
2	Baiturrahman	5,700
3	Meuraxa	4,350
4	Syiah Kuala	3,700
5	Jaya Baru	3,500
6	Banda Raya	3,200
7	Lueng Bata	3,050
8	Ulee Kareng	2,500
9	Kutaraja	2,000

Figure 1. Distribution of MSMEs by District in Banda Aceh
Source: DISKOPUKMDAG Banda Aceh, 2024

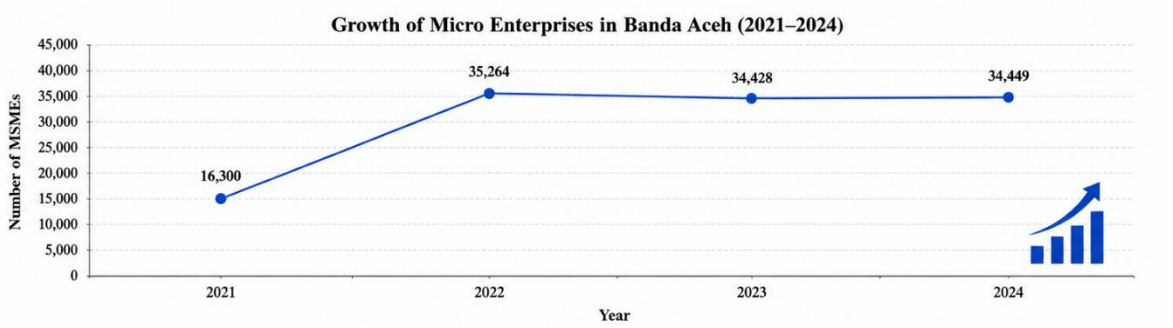


Figure 2. Registered Micro-Enterprise Counts in Banda Aceh (2021–2024)
Source: DISKOPUKMDAG Banda Aceh, 2024

Table 1. Evidence from Previous Studies on Taxpayer Compliance

Authors & Year	Sample & Context	Key Variables	Method	Findings / Inconsistency / Unresolved Issue
Saprudin, S & Napitupulu (2020)	60 MSME taxpayers in Jakarta	Tax knowledge, tax sanctions, taxpayer compliance	Quantitative; questionnaire; multiple regression using SPSS	Tax knowledge and tax sanctions were **significantly** associated with MSME taxpayer compliance.
Perdana & Dwirodra (2020)	100 MSME taxpayers registered at KPP Pratama Tabanan	Taxpayer awareness, tax knowledge, tax sanctions, taxpayer compliance	Quantitative; questionnaire; stratified random sampling; multiple linear regression	Tax knowledge had a positive and significant association with MSME taxpayer compliance (β = 0.306, p = 0.000), contrasting with the present study.
Sofianti & Wahyudi (2022)	110 MSME taxpayers in Demak	Taxpayer awareness, tax knowledge, tax sanctions, taxpayer compliance	Quantitative; questionnaire; multiple regression	Tax knowledge was positively and significantly associated with MSME taxpayer compliance.
Listya & Limajatini (2022)	150 MSME taxpayers in Periuk District, Tangerang	Tax knowledge, tax socialization, tax incentives, taxpayer compliance	Quantitative; questionnaire; multiple linear regression	Tax knowledge was **not significantly associated** with MSME taxpayer compliance (p = 0.121), whereas tax socialization was significant (p = 0.037).
Paulus & Tarmidi (2023)	100 MSMEs in Situsari Village, Bogor Regency	Tax knowledge, tax sanctions, tax socialization, e-filing, taxpayer compliance	Quantitative; questionnaire; path analysis	Tax knowledge and tax sanctions were **not significantly associated** with MSME taxpayer compliance, whereas tax socialization and e-filing were significant.
Wulandari et al. (2022)	MSMEs affected by COVID-19 at KPP Pratama Koja Utara, Jakarta	Tax incentive policy, tax regulation, MSMEs	Descriptive method; literature study	Examined tax incentives and tax relaxation for MSMEs but did not establish a direct association between tax regulation and taxpayer compliance, leaving this relationship unresolved.
Yuliati, Sistalia, & Yulianto (2024)	250 MSME respondents in Cirebon City	Tax sanctions, taxpayer awareness, tax understanding, tax knowledge, risk preference	Quantitative; SEM-PLS	Tax sanctions, taxpayer awareness, and tax understanding were significantly associated with taxpayer compliance. The study focused on tax understanding rather than examining tax socialization as a direct predictor.

Authors & Year	Sample & Context	Key Variables	Method	Findings / Inconsistency / Unresolved Issue
Sulistyowati & Nuryati (2024)	100 individual taxpayers at KPP Pratama Surakarta	Tax knowledge, taxpayer awareness, modern tax administration, tax amnesty, tax sanctions, compliance	Quantitative; accidental sampling; multiple regression	Tax knowledge and other examined factors had positive and significant associations with taxpayer compliance, contrasting with the present study's finding for tax knowledge.
Nursabrina, B.E (2024)	Individual taxpayers in Indonesia	Tax knowledge, tax sanctions, tax education, e-filing technology, compliance	Qualitative descriptive; secondary data	Identified tax knowledge as an important factor in taxpayer awareness and responsibility, but focused on individual taxpayers and secondary data, limiting its direct applicability to MSME contexts.
Wardani & Sari (2025)	100 MSME taxpayers in Ciputat District	Tax socialization, tax knowledge, taxpayer awareness, taxpayer compliance	Quantitative; purposive sampling; questionnaire; SmartPLS 4.0	Tax socialization had a positive and significant association with MSME taxpayer compliance (β = 0.652, t = 7.671, p = 0.000, R^2 = 0.764), consistent with the present study.
Permata (2025)	100 MSME taxpayers at KPP Pratama Ponorogo	Tax socialization, taxpayer compliance	Quantitative; purposive sampling; simple linear regression	Tax socialization had a positive and significant association with taxpayer compliance, consistent with the present study.
Current Study	**100 MSME taxpayers in Banda Aceh**	**Tax knowledge, tax socialization, tax regulation, taxpayer compliance**	**Quantitative; multiple linear regression**	**Tax knowledge was not significant (p = 0.732); tax socialization was significant (p = 0.014); tax regulation was not significant (p = 0.182).**

Table 1 identifies an unresolved empirical relationship between tax knowledge and taxpayer compliance. Saprudin et al. (2020), Yuliani et al. (2024), and Sulistyowati and Nuryati (2024) reported positive, significant associations, whereas Listya and Limajatini (2022) and Paulus and Tarmidi (2023) found no significant association. This mixed evidence leaves open whether the relationship is also observed among MSME taxpayers in a less-represented Indonesian regional setting.

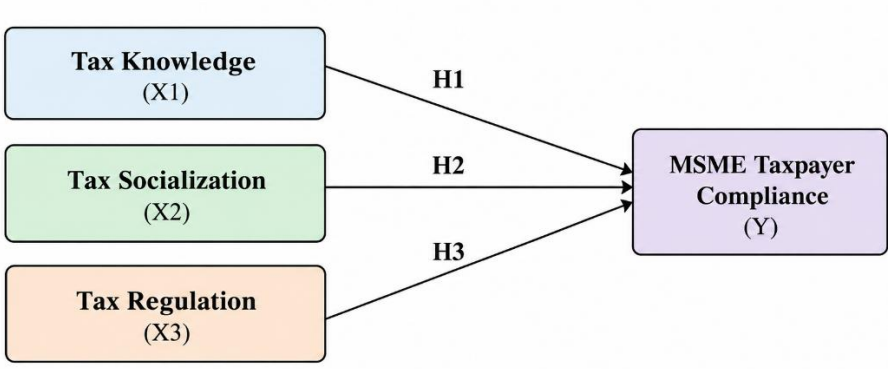


Figure 3. Empirical Framework of the study

As shown in Figure 1, the number of registered MSMEs is different in each of the nine districts in Banda Aceh.The most MSMEs are in Kuta Alam with 6,350 and Baiturrahman with 5,700.Then come Meuraxa with 4,350, Syiah Kuala with 3,700, Jaya Baru with 3,500, Banda Raya with 3,200, Lueng Bata with 3,050, Ulee Kareng with 2,500, and Kutaraja with 2,000. This geographic spread was used to show how many registered MSMEs were present in Banda Aceh and to set the background for choosing the group of people who were eligible to take part in the study. On the other hand, Ulee Kareng and Kutaraja have fewer registered MSMEs compared to others. The distribution does not show how much taxpayers are following rules or how businesses are growing, because the number is just about how many MSMEs are registered, not about how well they are following tax rules (DISKOPUKMDAG Banda Aceh, 2024).

Even though MSMEs are becoming more important for the economy, it's still really hard to get them to follow tax rules properly. Many business owners still struggle with understanding tax rules, figuring out how much tax they owe, keeping good financial records, and filing their tax returns on time. In Indonesia's self-assessment system, taxpayers are mainly responsible for figuring out, paying, and reporting their own tax duties. Because of this, not knowing enough about taxes can really stop people from willingly following tax rules. These challenges become even harder because tax rules and government processes are often changed a lot, and this can be especially tough for small businesses that don't have much knowledge about accounting or taxes. So, keeping taxpayers in line remains a key focus for both local governments and tax agencies in Banda Aceh.

Figure 2 reports the number of registered micro-enterprises recorded by DISKOPUKMDAG Banda Aceh for 2021–2024. The reported counts were 16,300 registered micro-enterprises in 2021, 35,264 in 2022, 34,428 in 2023, and 34,449 in 2024. These figures are presented descriptively and should not be interpreted as verified measures of actual enterprise growth or expansion of the local economic base. The available administrative data do not establish whether the changes in the reported counts reflect changes in the number of operating businesses, registration practices, administrative classification, or data-collection procedures across years. The data also do not provide information on NPWP registration, taxable turnover, tax filing status, or tax revenue associated with the reported enterprises. Accordingly, the figures are used only to describe the administrative population of registered MSMEs relevant to the context of this study.

The registered-MSME counts provide context for this study but do not establish tax compliance or tax revenue. This study therefore examines survey-based associations between tax

knowledge, tax socialization, tax regulation, and compliance among eligible MSME respondents.

The Indonesian government acknowledges the significant role of Micro, Small, and Medium Enterprises (MSMEs) and has consequently enacted several tax policy adjustments to facilitate taxpayer compliance. These adjustments encompass simpler income tax provisions for MSMEs, the use of electronic tax administration systems such as e-Filing, e-Billing, and Coretax, and ongoing educational programs concerning tax regulations. Recent policy revisions have also aimed to streamline tax administration, strengthen legal certainty, and reduce compliance burdens. These rules can also make it easier to handle paperwork and encourage more small businesses to follow the rules on their own. This is supported by Government Regulation No. 55 of 2022, as well as studies from the OECD (2023) and Dalope (2025). More recent research has found that several factors are associated with taxpayer compliance. Tax knowledge and understanding have been reported as important factors linked to taxpayer compliance.

Prior studies link tax knowledge to compliance: Wujarso et al. (2020) examined small businesses in Jakarta, Yuliani et al. (2024) studied small businesses in Cirebon, and Sulistyowati and Nuryati (2024) reported a positive, significant relationship between tax understanding and compliance. Tax socialization has also shown positive associations with compliance. Permata (2025), using 100 MSME taxpayers in Ponorogo, and Wardani and Sari (2025), studying 100 businesses in Ciputat, reported significant positive relationships. Wulandari et al. (2022) examined how tax incentives supported MSMEs during the COVID-19 pandemic.

Tax policy shapes the environment in which MSMEs meet their obligations, but the association between perceived regulatory quality and compliance may depend on implementation and local conditions. Clear, consistent rules may reduce compliance costs and improve legal certainty (OECD, 2023; Dalope, 2025), although prior findings vary across settings.

Table 1 identifies an unresolved empirical relationship between tax knowledge and taxpayer compliance. Saprudin et al. (2020), Yuliani et al. (2024), and Sulistyowati and Nuryati (2024) reported positive, significant associations, whereas Listya and Limajatini (2022) and Paulus and Tarmidi (2023) found no significant association. This mixed evidence leaves open whether the relationship is also observed among MSME taxpayers in a less-represented Indonesian regional setting.

Tax socialization has generally been positively associated with compliance, while direct evidence concerning tax regulation is more limited. This study therefore examines tax knowledge alongside socialization and regulation, estimating each predictor's adjusted association with compliance rather than claiming theoretical or methodological novelty.

Banda Aceh offers an additional regional setting because the studies summarized in Table 1 mainly concern Jakarta, Cirebon, Surakarta, Ciputat, and Ponorogo. The study does not claim that Banda Aceh is a distinct boundary condition; it does not test regional moderation or cross-regional interactions.

Accordingly, the study uses multiple linear regression to examine whether tax knowledge, tax socialization, and tax regulation are statistically associated with MSME taxpayer compliance in Banda Aceh, accounting for the other predictors.

The aim is to assess whether the mixed tax knowledge–compliance relationship is observed in this sample and to document the corresponding associations of tax socialization and tax regulation.

The contribution of this study is primarily empirical and contextual rather than theoretical or methodological. First, the study provides evidence on the previously inconsistent association between tax knowledge and taxpayer compliance by examining MSME taxpayers in Banda Aceh. This extends the empirical literature to a regional setting that is less represented in the studies synthesized in Table 1.

Second, the study documents the associations of tax knowledge, tax socialization, and tax regulation with taxpayer compliance within the same adjusted regression model. The simultaneous specification allows the tax knowledge–compliance association to be examined while accounting for the other predictors. This analytical combination is not presented as methodological innovation because multiple linear regression with established predictors is a conventional approach.

Third, the study provides additional empirical evidence concerning tax regulation and taxpayer compliance, a relationship for which direct evidence is comparatively limited in the literature reviewed. The finding can therefore be used to compare the Banda Aceh evidence with findings from other Indonesian MSME and taxpayer settings.

The study does not claim a new theoretical mechanism, a test or extension of Agency Theory or the Theory of Planned Behavior, or a statistically demonstrated regional boundary condition. These theories are retained as interpretive perspectives that provide conceptual context for the observed associations. Accordingly, the principal contribution is the provision of context-specific empirical evidence concerning taxpayer compliance rather than theoretical or methodological innovation.

Agency Theory provides a contextual perspective for understanding taxpayer compliance within Indonesia's self-assessment tax system. Under this system, taxpayers calculate, pay, and report their own tax obligations, while tax authorities establish rules, provide guidance, and monitor compliance. In this study, tax authorities are conceptually positioned as the principal and taxpayers as agents. The relationship involves information asymmetry because taxpayers possess more direct knowledge of their business activities, income, and tax obligations than tax authorities can continuously observe. This asymmetry creates a need for appropriate reporting requirements, information provision, and monitoring mechanisms to support compliance (Jensen & Meckling, 1976; OECD, 2023).

From this perspective, taxpayers are expected to calculate, pay, and report their obligations accurately, while tax authorities are expected to establish clear rules, communicate relevant information, and conduct appropriate oversight. Tax regulation represents the formal institutional framework specifying obligations and reporting procedures. Tax socialization represents an information-sharing mechanism through which authorities communicate rules, procedures, and responsibilities. Tax knowledge represents taxpayers' understanding of the rules and procedures applicable to their businesses. These variables can therefore be interpreted as contextual factors in the information and regulatory environment surrounding the taxpayer–tax authority relationship.

Agency Theory is used to interpret these relationships, not to directly test agency mechanisms. The study does not measure agency costs, information asymmetry, monitoring intensity, or other agency mechanisms as independent constructs. Instead, the theory helps explain why information provision, taxpayer understanding, and the regulatory environment may be relevant to compliance within a self-assessment system. It consequently provides an interpretive perspective for understanding the associations between tax knowledge, tax socialization, tax regulation, and MSME taxpayer compliance in Banda Aceh.

The Theory of Planned Behavior (TPB) provides an additional perspective for understanding taxpayer compliance. TPB proposes that behavioral intention is influenced by attitude

toward the behavior, subjective norms, and perceived behavioral control (Ajzen, 1991, 2020). In taxation, these concepts offer a framework for considering tax-related intentions and behavior. However, the present study does not directly measure attitude, subjective norms, perceived behavioral control, or behavioral intention. TPB is therefore an interpretive framework rather than a theory directly tested by the empirical model.

Attitude toward the behavior refers to an individual's positive or negative evaluation of performing a particular action. In taxation, it may concern how taxpayers evaluate compliance with their obligations. Subjective norms refer to perceived social expectations about whether an action should be performed and may relate to taxpayers' perceptions of social expectations concerning compliance. Perceived behavioral control refers to an individual's perception of the ease or difficulty of performing an action; in taxation, it offers a perspective on taxpayers' perceived ability to fulfill their obligations. These three components are discussed as theoretical background only and are not measured in the present study (Ajzen, 1991, 2020; Alm & Torgler, 2023; OECD, 2023).

Accordingly, TPB helps position compliance as a behavioral phenomenon but does not specify the empirical pathways examined here. The model directly estimates associations between tax knowledge, tax socialization, tax regulation, and MSME taxpayer compliance. It does not test pathways through attitude, subjective norms, perceived behavioral control, or behavioral intention. Findings should not be interpreted as a direct test, validation, or extension of TPB, but as theory-informed contextual evidence.

Tax knowledge refers to taxpayers' understanding of tax rules, rights and obligations, calculation procedures, reporting requirements, and other information needed to meet tax responsibilities correctly. Under Indonesia's self-assessment system, taxpayers must determine the amount of tax owed, pay it, and submit required reports themselves. Adequate knowledge may help taxpayers interpret applicable rules, perform tax-related tasks accurately, and reduce reporting errors. Conversely, limited knowledge may contribute to misunderstanding, unintentional mistakes, and reduced willingness or ability to comply (Alm & Torgler, 2023; OECD, 2023).

Prior studies have often reported a positive association between tax knowledge and compliance. Saprudin et al. (2020) found that greater tax knowledge was associated with higher compliance among small business owners in Jakarta. Yuliani et al. (2024) reported that tax understanding significantly influenced tax compliance among small businesses in Cirebon. Sulistyowati and Nuryati (2024) similarly found that tax knowledge was associated with individuals' compliance with tax laws. Perdana and Dwirandra (2020) and Sofianti and Wahyudi (2022) also reported positive and statistically significant associations between tax knowledge or understanding and compliance in their respective contexts.

However, findings have not been consistent. Listya and Limajatini (2022) and Paulus and Tarmidi (2023) reported no statistically significant association between tax knowledge and taxpayer compliance. These divergent results suggest that the relationship may vary according to taxpayer populations, institutional conditions, and research settings. Knowledge alone may not ensure that taxpayers comply, particularly when other practical or contextual factors affect the fulfillment of obligations.

Tax socialization refers to the communication and dissemination of tax-related information and guidance by tax authorities. It may include educational programs, seminars, counseling, information materials, online services, and direct communication about tax obligations and procedures. In this study, tax socialization is operationalized as taxpayers' perceptions of the provision, accessibility, and usefulness of information and communication supplied by tax authorities. It does not measure the objective frequency of socialization activities, the number of programs attended, or verified exposure to particular outreach events. Rather, it captures how taxpayers perceive the availability and usefulness of information and guidance for understanding and fulfilling tax obligations.

Within Agency Theory, socialization can be viewed as an information-sharing dimension of the taxpayer–tax authority relationship. Authorities provide relevant guidance, and taxpayers use that information when fulfilling self-assessed obligations. Clear and accessible communication may help taxpayers interpret requirements and complete tax procedures (OECD, 2023). However, the present study does not measure information asymmetry, monitoring intensity, or agency costs. Agency Theory is therefore a contextual perspective on information provision, not a directly tested mechanism.

It is important to distinguish exposure, frequency, accessibility, quality, and perceived usefulness. A taxpayer may attend a seminar without considering the information accessible or useful. Frequent outreach does not necessarily mean that the information is relevant, understandable, or applicable to a particular business. The present study consequently focuses on perceived accessibility and usefulness rather than frequency or amount of exposure. Its findings should be interpreted as evidence about perceived tax socialization, not as a direct assessment of the objective effectiveness of outreach programs.

Previous empirical studies generally report positive associations between socialization and compliance, although findings may depend on how socialization is measured and on the characteristics of the taxpayer population. Wardani and Sari (2025) reported a positive and statistically significant association between tax socialization and MSME taxpayer compliance in Ciputat. Permata (2025) likewise found a positive and statistically significant association when socialization was examined as a predictor of compliance among MSMEs in Ponorogo, reporting a coefficient of 0.652 and a significance value of 0.000. Paulus and Tarmidi (2023) examined tax socialization alongside tax knowledge and other tax-related factors in the MSME context. Collectively, these studies support the relevance of tax communication and information provision, but do not establish that the frequency or objective intensity of outreach necessarily produces higher compliance. This relationship merits further study locally.

For MSMEs, accessible and useful tax information may be important because owners often need to interpret and apply requirements directly in their businesses. Nevertheless, socialization should not be assumed to produce compliance automatically, and all outreach formats should not be presumed equally useful. This study examines whether taxpayers' perceptions of socialization are statistically associated with reported compliance, recognizing that the measured construct represents perceived information and communication rather than objectively verified exposure, frequency, or program quality.

Tax regulation comprises the legal rules, government directives, and procedural guidelines defining taxpayers' rights and obligations and the steps required to meet them. In Indonesia's self-assessment system, these rules provide the basis for taxpayer registration, tax calculation, payment, reporting, and related administrative activities. For MSMEs, a clear, consistent, and understandable regulatory framework can provide legal certainty, reduce administrative obstacles, and help taxpayers fulfill responsibilities efficiently (Government Regulation No. 55 of 2022; OECD, 2023).

Indonesia's MSME tax framework has undergone several policy changes intended to improve the business environment

while supporting voluntary compliance. Law No. 36 of 2008 amended Law No. 7 of 1983 on Income Tax and provided a legal basis for the final income tax system, including Article 4(2). Government Regulation No. 46 of 2013 subsequently established a final income tax rate of 1% for MSMEs with annual turnover up to IDR 4.8 billion. Government Regulation No. 23 of 2018 reduced the rate to 0.5% to lessen the tax burden on eligible small enterprises. Government Regulation No. 55 of 2022 further specified eligibility, the duration of tax incentives, and provisions intended to strengthen legal certainty and administrative efficiency. Minister of Finance Regulations (PMK) and Director General of Taxes Regulations (PER) provide more detailed procedures concerning registration, payment, reporting, and other administrative requirements.

Straightforward and transparent rules may increase taxpayers' confidence by reducing uncertainty and administrative burdens. Conversely, complicated requirements or frequent changes may increase compliance costs, cause confusion, and discourage voluntary compliance (Ajzen, 2020; OECD, 2023). The perceived clarity and usability of regulation may therefore be relevant to how taxpayers report their compliance, although this association should not automatically be understood as causal.

Previous research has examined taxpayers' perceptions of regulatory quality and their compliance behavior. Saprudin et al. (2020) found that taxpayers with a clearer understanding of applicable tax laws were more likely to comply because they could calculate, report, and pay taxes more accurately. Nursabrina (2024) reported a favorable relationship between perceived regulatory clarity and compliance intention, suggesting that clarity can reduce uncertainty in tax administration. Dalope (2025) argued that regulatory changes, including Government Regulation No. 55 of 2022 and the expansion of digital tax practices, have simplified tax processes and supported compliance among MSMEs. These findings suggest that an effective regulatory system can provide legal clarity and an administrative environment that supports voluntary compliance.

Research has also considered tax regulation through policy implementation rather than direct statistical relationships with compliance. Wulandari et al. (2022), for example, examined tax incentives and relaxation measures for MSMEs during the COVID-19 pandemic. Their discussion highlighted the role of tax policy in supporting business operations and economic recovery, while identifying challenges involving information disparities, limited tax knowledge, and access to tax services. Such evidence demonstrates the relevance of regulatory arrangements to MSME conditions but does not by itself establish a direct statistical association between perceived tax regulation and compliance.

Compared with tax knowledge and socialization, direct empirical evidence concerning the association between perceived tax regulation and taxpayer compliance remains comparatively limited in the literature reviewed. Prior research has often focused on policy implementation, regulatory clarity, administrative procedures, and business conditions. It therefore remains important to examine whether MSME taxpayers' perceptions of tax regulation are statistically associated with reported compliance. This study addresses that question in Banda Aceh while controlling for tax knowledge and tax socialization. The focus is on the direct statistical association, not an unmeasured TPB pathway through perceived behavioral control or behavioral intention.

MSME taxpayer compliance refers to the extent to which micro, small, and medium enterprises fulfill tax obligations in accordance with applicable laws and regulations. Under Indonesia's self-assessment system, taxpayers are responsible for registering, calculating the amount owed, paying taxes, and submitting returns accurately within established deadlines. The system relies substantially on voluntary compliance, supported by taxpayers' understanding of their responsibilities and ability to fulfill them without continuous intervention by tax authorities (OECD, 2023; World Bank, 2024).

Despite continuing efforts to simplify the MSME tax system, encouraging businesses to comply voluntarily remains a challenge. Some business owners have difficulty interpreting tax requirements, calculating liabilities, and preparing reports. Poor record-keeping and the absence of personnel dedicated to tax matters may intensify these difficulties, particularly in small businesses. Some taxpayers may view taxation primarily as an administrative burden rather than as a contribution to public and community development. Frequent regulatory changes may also create uncertainty and increase the effort and cost associated with compliance. These conditions indicate that improving compliance may require not only clear regulations but also ongoing education and accessible assistance that help taxpayers understand their obligations and feel more capable of fulfilling them (Nursabrina, 2023; OECD, 2023).

The conceptual framework centers on three predictors of MSME taxpayer compliance: tax knowledge, tax socialization, and tax regulation. It is informed primarily by the empirical literature summarized in Table 1, which presents heterogeneous evidence about the association between tax knowledge and compliance and comparatively limited direct evidence concerning perceived tax regulation. The framework therefore translates the study's research questions and reviewed evidence into three hypotheses about direct statistical associations.

Agency Theory and TPB are retained as complementary interpretive perspectives, not as mechanisms tested by the empirical model. Agency Theory provides context for the information and regulatory relationship between taxpayers and tax authorities. TPB provides a broader behavioral perspective on compliance. The study does not operationalize agency costs, information asymmetry, monitoring intensity, attitude, subjective norms, perceived behavioral control, or behavioral intention. Accordingly, the framework does not propose or test causal pathways through these theoretical constructs.

The framework specifies direct relationships between each predictor and MSME taxpayer compliance. This structure clearly distinguishes theoretical context from the variables directly measured in the survey and estimated in the empirical regression model. The arrows in Figure 3 should therefore be read as hypothesized statistical associations, not as proof of causality or as representations of unmeasured theoretical mechanisms. Tax knowledge concerns understanding of rules and procedures; tax socialization concerns perceived accessibility and usefulness of tax-related information and communication; and tax regulation concerns perceptions of the formal rules governing tax obligations. Compliance is the outcome variable. Examining the three predictors together allows the empirical model to estimate each association while accounting for the other predictors.

Tax knowledge encompasses understanding tax regulations, calculation procedures, reporting requirements, and taxpayer rights and obligations under Indonesia's self-assessment system. It may help MSMEs fulfill responsibilities but does not necessarily ensure compliance.

Prior findings are mixed. Perdana and Dwirandra (2020), Saprudin et al. (2020), Sofianti and Wahyudi (2022), Yuliani et al. (2024), and Sulistyowati and Nuryati (2024) reported positive, significant associations between tax knowledge or understanding and compliance. Conversely, Listya and Limajatini (2022) and Paulus and Tarmidi (2023) found no significant association. Findings may vary across populations and settings.

This study examines the association between tax knowledge and MSME taxpayer compliance in Banda Aceh. Agency Theory and the Theory of Planned Behavior (TPB) provide context, but their mechanisms are not directly tested. The hypothesis is based primarily on empirical findings.

H1: Tax knowledge is positively associated with MSME taxpayer compliance.

Tax Socialization and MSME Taxpayer Compliance

Tax socialization includes education, seminars, counseling, online information, and direct assistance from tax authorities. These activities may clarify regulations and compliance procedures.

Permata (2025) found a positive, significant association between tax socialization and MSME compliance in Ponorogo (coefficient = 0.652; significance = 0.000). Wardani and Sari (2025) likewise reported a positive, significant association among MSME taxpayers in Ciputat. These findings support further examination of this relationship in Banda Aceh, although results may vary across settings.

In this study, tax socialization refers to taxpayers' perceptions of the accessibility and usefulness of tax education, information, counseling, and communication. Agency Theory contextualizes socialization as information provision in the taxpayer–authority relationship; however, information asymmetry, agency costs, and monitoring are not directly tested. TPB is likewise not tested because its behavioral constructs are not measured.

H2: Tax socialization is positively associated with MSME taxpayer compliance.

Tax regulation establishes taxpayers' rights, obligations, and procedures under Indonesia's self-assessment system. Relevant provisions include Law No. 36 of 2008, amending Law No. 7 of 1983 on Income Tax; Government Regulation No. 46 of 2013, which set a 1% final rate for eligible MSMEs with annual turnover up to IDR 4.8 billion; Government Regulation No. 23 of 2018, which reduced the rate to 0.5%; and Government Regulation No. 55 of 2022, addressing eligibility, incentive duration, legal certainty, and administrative efficiency. Minister of Finance Regulations (PMK) and Director General of Taxes Regulations (PER) specify procedures.

Clear, consistent rules may reduce uncertainty and compliance burdens, while complexity or frequent changes may cause confusion (Ajzen, 2020; OECD, 2023). Saprudin et al. (2020) linked clearer tax understanding with more accurate compliance, and Nursabrina (2024) discussed regulatory clarity and compliance intention. Dalope (2025) argued that regulatory changes and digital tax practices have simplified procedures. Wulandari et al. (2022), however, examined pandemic-era incentives and implementation challenges, not the direct relationship tested here. Because direct evidence on perceived regulation and compliance remains limited, this study tests their association while controlling for tax knowledge and socialization, without proposing an unmeasured TPB pathway.

H3: Tax regulation is positively associated with MSME taxpayer compliance.

Methods

The study focused on MSMEs in Banda Aceh. DISKOPUKMDAG reported 34,449 registered MSMEs in 2024. This administrative count describes registered businesses, not verified active taxpayers, NPWP status, taxable turnover, filing status, or payments recorded by KPP Pratama Banda Aceh; it was used only to describe the study context and administrative population.

Purposive sampling selected respondents who (1) operated an MSME in Banda Aceh, (2) held a Taxpayer Identification Number (NPWP), (3) were actively operating during the study, and (4) had experience calculating, paying, and reporting taxes. NPWP status and filing experience were self-reported and were not verified against KPP Pratama records; NPWP was an eligibility criterion, not a behavioral compliance measure. Data were collected from May 1–31, 2026, using Google Forms links distributed through DISKOPUKMDAG's MSME network. Researchers also assisted business owners with questionnaire completion and clarified the study purpose and questions when needed.

DISKOPUKMDAG's role was limited to facilitating access to its MSME network and distributing the survey link. It did not select respondents, provide respondent-specific answers or taxpayer information, participate in questionnaire responses or data analysis, interpret findings, or influence manuscript preparation or publication. The research team retained responsibility for eligibility decisions and the final analytical sample.

Because access to the MSME network was facilitated through DISKOPUKMDAG, the recruitment process may have introduced a potential selection consideration, as MSMEs reachable through the institution's network may differ from those outside the network. The use of purposive sampling further limits statistical representativeness. Accordingly, the findings should be interpreted as associations within the sampled MSMEs rather than as statistically generalizable estimates for all MSMEs in Banda Aceh.

A total of 141 micro, small, and medium-sized enterprises (MSMEs) were contacted and furnished with questionnaires. From this group, 112 questionnaires were submitted, achieving a completion rate of 79.4%. Subsequently, twelve of the submitted questionnaires were disqualified due to incompleteness or failure to satisfy the requisite eligibility criteria. This exclusion encompassed respondents who indicated they did not possess an active NPWP or whose enterprises had ceased operations prior to the survey's execution. After the initial review and data refinement, 100 questionnaires that were both complete and eligible were selected for subsequent analysis, which constituted 70.9% of the MSMEs initially approached.

To ensure data integrity and prevent duplicate entries, two verification procedures were implemented. The initial step involved reviewing business identifiers that were voluntarily provided by respondents, including the NPWP of the business owner or business, where applicable, or a combination of the MSME name and operational address. A subsequent data-cleaning process was conducted using both digital and manual procedures in Excel and SPSS to identify potential duplicate records based on business names and telephone numbers. Where duplicate records were identified, only one eligible response was retained for analysis. Any identifying information used for duplicate checking was not included in the analytical dataset. The final dataset comprised 100 eligible MSME respondents, including 65 owners, 20 managers, and 15 tax administrators. Each participant reported having direct decision-making authority or sufficient knowledge of the tax responsibilities of the respective organization, including tax calculation, payment, and reporting. A priori power analysis indicated that a minimum of approximately 77 participants was required for the planned multiple linear regression, based on a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, three independent variables, and statistical power of 0.80. The final sample of 100 eligible respondents therefore exceeded the minimum required sample size.

Formal ethical approval was not obtained. Participation was voluntary, and informed consent was obtained before each respondent completed the questionnaire. Respondents were informed of the study's purpose, the voluntary nature of participation, confidentiality, and their right to decline or withdraw without penalty. Names, NPWP numbers, business

addresses, and other direct identifiers were not reported. Responses were de-identified before analysis and used only for academic research; identifiable tax-related information was not shared with tax authorities or other external parties.

Electronic files were password-protected and accessible only to research-team members directly involved in the study. Data will be retained only for the applicable institutional or research-management period, after which sensitive electronic files will be securely deleted and physical records destroyed. The manuscript does not claim institutional ethical clearance or exemption.

The assessment of tax knowledge encompassed four inquiries regarding taxpayers' comprehension of Micro, Small, and Medium-sized Enterprises (MSME) tax statutes, pertinent tax percentages, mandates for tax submissions, and the rights and responsibilities of taxpayers. Tax socialization was evaluated through five items concerning tax guidance and educational initiatives, the distribution of tax-related information, tax-focused conferences or training sessions, tax advisory services, and the interactions facilitated by tax personnel. Tax regulation was gauged by five items pertaining to electronic tax management, the perceived equity of tax stipulations, the straightforwardness of tax administrative processes, uniformity in the application of tax laws, and assurance of legal standing. Adherence to tax obligations by MSME taxpayers was evaluated using four items addressing precise tax computations, punctual tax remittances, comprehensive and exact tax declarations, and the lack of overdue tax liabilities. These metrics are centered on compliance actions that may differ across registered taxpayers.

The instruments for all measurements employed a five-point Likert scale, with responses ranging from 1 (representing strong disagreement) to 5 (representing strong agreement). A higher numerical score indicates stronger agreement with the statement presented. To ensure transparency and facilitate replication, the precise wording of all 18 questionnaire items is provided in Appendix A. The questionnaire items were derived from measurement dimensions established in previous taxation studies and were contextualized to the characteristics of MSME taxpayers in Banda Aceh. The questionnaire was administered in Indonesian; therefore, no separate translation or back-translation process was required.

A concise overview of the participant selection process is outlined in Table 2

Table 2. Sampling Procedure

Description	Number
Administrative population (Registered MSMEs in Banda Aceh, 2024)	34,449
Sampling Technique	Purposive Sampling
A priori power analysis	$f^2 = 0.15$; $\alpha = 0.05$; power = 0.80; 3 predictors
Minimum Required Sample	77 respondents
Final Sample	100 respondents

Source: Processed by the Authors (2026), based on DISKOPUKMDAG Banda Aceh (2024).

Table 3. Measurement of Variables No separate expert content review or pilot test was

Variable	Operational Definition	Indicators	Item	Scale	Sources
Tax Knowledge (X_1)	The level of taxpayers' understanding of tax regulations and procedures required to fulfill their tax obligations under Indonesia's self-assessment system.	1. Understanding of tax regulations 2. Understanding of tax calculation procedures 3. Understanding of tax reporting requirements 4. Understanding of taxpayers' rights and obligations	4	Likert Scale (1–5)	Palil (2010); Rahayu (2020)
Tax Socialization (X_2)	Taxpayers' perceptions of educational and communication activities conducted by tax authorities to improve tax awareness and understanding.	1. Tax education programs 2. Dissemination of tax information 3. Tax seminars and workshops 4. Tax counseling services 5. Communication provided by tax authorities	5	Likert Scale (1–5)	Wardani and Sari (2025)
Tax Regulation (X_3)	Taxpayers' perceptions of the quality and implementation of tax regulations that facilitate compliance under Indonesia's self-assessment system.	1. Clarity of tax regulations 2. Ease of understanding applicable tax rules 3. Simplicity of tax administrative procedures 4. Consistency of tax regulation implementation 5. Legal certainty provided by tax regulations	5	Likert Scale (1–5)	Nursabrina, B.E (2024) Dalope, C (2025)
MSME Taxpayer Compliance (Y)	The extent to which MSME taxpayers fulfill their tax obligations in accordance with applicable tax regulations.	1. Taxpayer registration (NPWP) 2. Accurate tax calculation 3. Timely tax payment 4. Timely submission of tax returns	4	Likert Scale (1–5)	Kirchler (2022); Rahayu (2020)

.

conducted before the main survey, and no items were removed or revised on the basis of preliminary pretesting. Accordingly, the measurement items are not presented as validated adaptations for MSME taxpayers in Banda Aceh. After data collection, corrected item-total correlations were examined to assess item discrimination, while Cronbach's alpha was used to assess the internal consistency reliability of each construct. These post hoc assessments were used to evaluate the observed measurement performance in the study sample and were not treated as substitutes for expert content validation or pilot testing. The measurement indicators and their sources are summarized in Table 3.

To uphold the privacy of the participants, no personally identifiable details were included in the final report. The data were anonymized prior to the analytical phase, and all responses pertaining to taxation matters were managed as sensitive research material. Digital survey responses were secured within password-protected directories accessible exclusively to the research personnel. The utilization of this data was restricted to academic research endeavors and was not disseminated to fiscal agencies or any other external entities in a format that would allow for individual identification.

Before hypothesis testing, corrected item-total correlations (threshold ≥ 0.30) were used to assess item discrimination, and Cronbach's alpha assessed internal consistency. These checks do not establish construct validity; EFA and CFA were not conducted.

Data were analyzed using IBM SPSS Statistics 26. Procedures included descriptive statistics, item discrimination and reliability checks, tests of residual normality, multicollinearity and heteroscedasticity, multiple linear regression, R^2, individual t-tests, and the overall F-test. Because observations were cross-sectional and unordered, the Durbin–Watson statistic was reported descriptively rather than treated as a conclusive test of temporal autocorrelation.

The multiple linear regression model employed in this study is expressed as follows:

$$Y=\alpha+\beta1X1+\beta2X2+\beta3X3+\varepsilon$$

where:

Y = MSME Taxpayer Compliance

α = Constant

β_1–β_3 = Regression coefficients

X_1 = Tax Knowledge

X_2 = Tax Socialization

X_3 = Tax Regulation

ε = Error term

Statistical significance was evaluated at 5%; p-values below 0.05 were considered statistically significant.

Sensitivity Analysis

A sensitivity analysis was specified to examine whether the inclusion of the NPWP item affected the measurement of MSME taxpayer compliance. Because possession of an NPWP was an eligibility requirement, the revised compliance measure excludes the NPWP item and focuses on three behavioral indicators: accurate tax calculation, timely tax payment, and timely submission of tax returns. The regression model is re-estimated using this revised compliance score to assess whether the substantive conclusions regarding H1, H2, and H3 remain consistent.

Result and Discussion

A total of 100 MSME taxpayers in Banda Aceh participated in the study. All respondents possessed a Taxpayer Identification Number (NPWP). Table 4 summarizes their gender, age, education, business tenure, and number of employees.

Women represented 94.0% of respondents and men 6.0%. The largest age group was 31–35 years (47.0%), followed by ages 36–40 (23.0%), 25–30 (22.0%), and 41–45 (8.0%). Diploma holders accounted for 46.0%, bachelor's degree holders 26.0%, master's degree holders 15.0%, and senior high school graduates 13.0%. Most businesses had operated for 6–10 years (76.0%); 21.0% reported 11–15 years, 2.0% more than 16 years, and 1.0% 2–5 years. Two employees were reported by 48.0%, one by 45.0%, and three by 7.0%. These characteristics describe the sample and should not be generalized to all Banda Aceh MSMEs.

A preliminary review of the gathered information was performed utilizing descriptive statistical methods to depict participants' views on each research element. Descriptive statistics summarize respondents' ratings of the four study variables (see Table 5).

Tax knowledge had the highest mean (M = 4.333, SD = 0.322), followed by tax regulation (M = 4.318, SD = 0.238), tax socialization (M = 4.286, SD = 0.283), and taxpayer compliance (M = 4.050, SD = 0.448). The high means suggest generally favorable self-reported perceptions, while small standard deviations—especially for regulation and socialization—indicate limited response dispersion. These ratings are not verified tax-record measures.

Before hypothesis testing, item discrimination and internal consistency were examined using corrected item-total correlations and Cronbach's alpha. A corrected item-total correlation of at least 0.30 was the prespecified criterion for item discrimination. These diagnostics describe item performance in this sample; they do not establish content validity or replace expert review and pilot testing.

Table 6 presents the corrected item-total correlations and Cronbach's alpha coefficients for the four constructs. All corrected item-total correlations exceeded 0.30: 0.357–0.636 for compliance, 0.319–0.593 for knowledge, 0.314–0.378 for socialization, and 0.331–0.363 for regulation. Cronbach's alpha was 0.623, 0.799, 0.672, and 0.741, respectively, with knowledge highest and compliance lowest.

Table 7 provides additional information on alpha-if-item-deleted values and inter-item correlations. Alpha-if-item-deleted values and inter-item correlations provided supplementary diagnostics. Inter-item correlations ranged from 0.163–0.510 for compliance, 0.116–0.327 for socialization, 0.107–0.320 for knowledge, and 0.012–0.192 for regulation. Deleting individual items did not provide a clear basis for improving reliability, so all items were retained for the primary analysis on statistical and theoretical grounds.

The modest alpha coefficients for compliance and socialization limit measurement precision. No expert content review, pilot test, EFA, or CFA was conducted. Thus, these post hoc diagnostics describe item discrimination and internal consistency but do not establish content or construct validity. Future studies should seek expert review, pilot the questionnaire, and evaluate factor structure before the main survey.

The original four-item compliance measure included an item on NPWP registration (Y1), although possession of an NPWP was also an eligibility requirement for participation. The item had a corrected item-total correlation of 0.357; deleting it produced a Cronbach's alpha of 0.404. Because all sampled respondents were already registered, this item had structurally restricted variation and may have offered limited discrimination among them. A revised compliance measure should therefore focus on behavioral indicators that can vary among registered taxpayers, namely accurate tax calculation, timely payment, and timely filing. The sensitivity specification excluding NPWP is conceptually preferable for assessing behavioral compliance in this sample. However, the regression results reported below were estimated using the original compliance specification. They must not be described as robust to exclusion of the NPWP

item unless the revised scale is re-estimated and the resulting coefficients and model statistics are reported.

Before estimating the multiple linear regression, normality of standardized residuals, multicollinearity, and heteroscedasticity were assessed. The results are summarized in Table 8.

A compilation of the outcomes from these classical assumption tests is presented in Table 8.

Normality was assessed using standardized residuals. The Kolmogorov–Smirnov statistic was 0.075 (p = 0.200). The histogram and Normal P–P plot (Figures 4 and 5) showed a broadly bell-shaped distribution and points generally following the diagonal, with minor deviations. The residual mean was approximately zero (−1.82E−15) and the standard deviation was 0.980 for 100 observations. Together, these checks provided no substantial evidence of non-normality

Tolerance values ranged from 0.803 to 0.997, and VIF values ranged from 1.003 to 1.245. These results did not indicate substantial multicollinearity among tax knowledge, tax socialization, and tax regulation. The Glejser test produced significance values above 0.05 for the predictors, providing no statistically significant evidence of heteroscedasticity in the residuals. These diagnostics support proceeding with the specified regression, while not eliminating every possible limitation associated with self-reported, cross-sectional data.

Multiple linear regression was used to estimate the associations of tax knowledge, tax socialization, and tax regulation with MSME taxpayer compliance. The model included 100 observations and three independent variables. The coefficient estimates are presented in Table 9.

All three estimated coefficients were positive, but only tax socialization was statistically significant at the 5% level. Tax knowledge had a positive, non-significant association with compliance (B = 0.048, β = 0.038, t = 0.344, p = 0.732, 95% CI [−0.230, 0.326]); H1 was therefore not supported. Tax socialization was positively and significantly associated with compliance (B = 0.400, β = 0.293, t = 2.517, p = 0.014, 95% CI [0.084, 0.716]); H2 was supported. Tax regulation had a positive but non-significant association (B = 0.247, β = 0.157, t = 1.345, p = 0.182, 95% CI [−0.180, 0.546]); H3 was not supported. Tax socialization had the largest observed standardized coefficient (β = 0.293), although the coefficients were not formally compared and this descriptive ranking does not establish a statistically stronger association (see Table 10).

The overall model was statistically significant, F(3, 96) = 4.385, p = 0.006. Thus, the three predictors were jointly associated with taxpayer compliance within the sample. Overall model significance does not demonstrate that every predictor

Table 4. Respondent Characteristics

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	6	6.0
	Female	94	94.0
Age	25–30 years	22	22.0
	31–35 years	47	47.0
	36–40 years	23	23.0
	41–45 years	8	8.0
Education Level	Senior High School	13	13.0
	Diploma	46	46.0
	Bachelor's Degree	26	26.0
	Master's Degree	15	15.0
Years of Business Operation	2–5 years	1	1.0
	6–10 years	76	76.0
	11–15 years	21	21.0
	More than 16 years	2	2.0
Number of Employees	1 employee	45	45.0
	2 employees	48	48.0
	3 employees	7	7.0

Table 5. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Tax Knowledge	100	3.750	5.000	4.333	0.322
Tax Socialization	100	3.600	5.000	4.286	0.283
Tax Regulation	100	4.000	5.000	4.318	0.238
Taxpayer Compliance	100	3.333	5.000	4.050	0.448

Source: Primary Data Processed by the Authors (2026).

Table 6. Item Discrimination and Internal Consistency Reliability Results

Variable	Item	Corrected Item-Total Correlation	Cronbach's Alpha
MSME Taxpayer Compliance	Y1	0.357	0.623
	Y2	0.636	
	Y3	0.561	
	Y4	0.636	
Tax Knowledge	X1.1	0.343	0.799
	X1.2	0.319	

Variable	Item	Corrected Item-Total Correlation	Cronbach's Alpha
	X1.3	0.328	
	X1.4	0.593	
	X1.5	0.593	
Tax Socialization	X2.1	0.378	0.672
	X2.2	0.341	
	X2.3	0.330	
	X2.4	0.327	
	X2.5	0.314	
Tax Regulation	X3.1	0.331	0.741
	X3.2	0.363	
	X3.3	0.352	
	X3.4	0.336	

Source: Primary Data Processed by the Authors (2026).

Table 7. Reliability Diagnostics

Variable	No. of Items	Cronbach's Alpha	Alpha if Item Deleted	Inter-Item Correlation Range
MSME Taxpayer Compliance	4	0.623	0.404–0.630	0.163–0.510
Tax Knowledge	5	0.799	0.518–0.573	0.107–0.320
Tax Socialization	5	0.672	0.166–0.422	0.116–0.327
Tax Regulation	4	0.741	0.114–0.293	0.012–0.192

Source: Primary Data Processed by the Authors (2026).

Table 8. Classical Assumption Test Results

Test	Indicator	Result	Conclusion
Normality	Kolmogorov–Smirnov	Statistic = 0.075; p = 0.200	No substantial evidence of non-normality
Multicollinearity	Tolerance	0.803–0.997	No indication of multicollinearity
	VIF	1.003–1.245	No indication of multicollinearity
Heteroscedasticity	Glejser Sig.	> 0.05	No indication of heteroscedasticity

Source: Primary Data Processed by the Authors (2026).

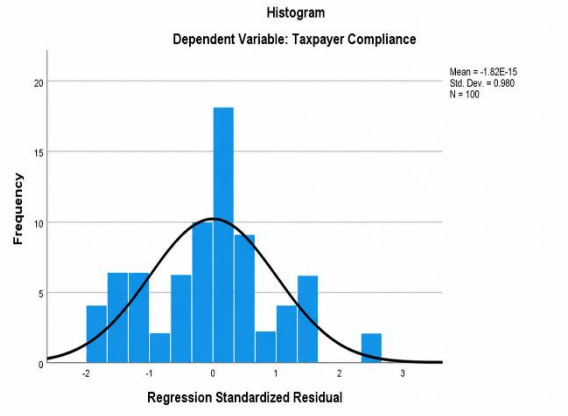


Figure 4. Histogram of Regression Standardized Residual
Dependent Variable: Taxpayer Compliance

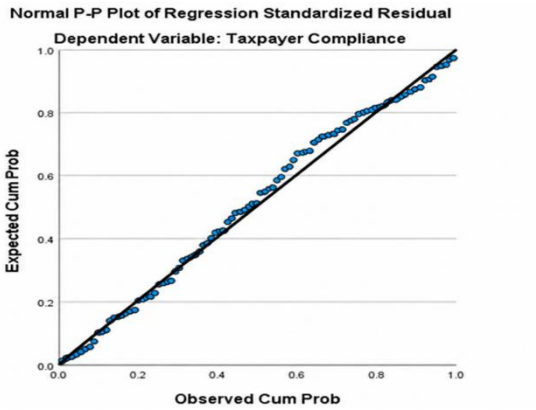


Figure 5. Normal P–P Plot of Regression

Table 9. Multiple Linear Regression Results

Variable	B	Std. Error	Beta	t	Sig.	95% CI for B	Decision
Constant	3.191	1.145	–	2.786	0.006	–	–
Tax Knowledge	0.048	0.140	0.038	0.344	0.732	−0.230 to 0.326	Not Significant
Tax Socialization	0.400	0.159	0.293	2.517	0.014	0.084 to 0.716	Significant
Tax Regulation	0.247	0.183	0.157	1.345	0.182	−0.180 to 0.546	Not Significant

Dependent Variable: MSME Taxpayer Compliance
Source: Primary Data Processed by the Authors (2026).

Table 10. ANOVA and Overall Model Significance

Model	Sum of Squares	df	Mean Square	F	p-value
Regression	3.514	3	1.171	4.385	0.006
Residual	25.646	96	0.267		
Total	29.160	99			

Dependent variable: Taxpayer Compliance
Predictors: Tax Knowledge, Tax Socialization, Tax Regulation
Source: Primary Data Processed by the Authors (2026).

Table 11. Model Fitness and Hypothesis Testing

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin–Watson
1	0.347	0.121	0.093	0.517	1.055

Source: Primary Data Processed by the Authors (2026).

Table 12. Hypothesis Testing Results

Hypothesis	Relationship	Decision
H1	Tax Knowledge ⟶ MSME Taxpayer Compliance	**Not Supported**
H2	Tax Socialization ⟶ MSME Taxpayer Compliance	**Supported**
H3	Tax Regulation ⟶ MSME Taxpayer Compliance	**Not Supported**

Source: Primary Data Processed by the Authors (2026).

is significant individually, nor does it establish causality.

The model's R^2 was 0.121 and adjusted R^2 was 0.093, indicating that the three predictors accounted for 12.1% of observed compliance variance, or 9.3% after adjustment. Explanatory capacity was limited, and other factors may also be associated with compliance. The Durbin–Watson statistic was 1.055; because observations were cross-sectional and unordered, it is reported descriptively rather than as conclusive evidence of autocorrelation or residual independence. The results are presented in Table 11.

Tax socialization was the only predictor with a significant positive association with MSME taxpayer compliance ($p < 0.05$). Tax knowledge and tax regulation showed positive but insignificant associations. The model explained 12.1% of the variance in compliance ($R^2 = 0.121$); adjusted R^2 of 0.093, suggesting that other factors may influence compliance.

Because the data were cross-sectional, the Durbin–Watson statistic was reported descriptively rather than as a definitive test of temporal autocorrelation. Duplicate-response screening was conducted to avoid repeated observations.

The results of the partial hypothesis tests are summarized in Table 12.

Tax Knowledge and MSME Taxpayer Compliance

Tax knowledge was positively but not significantly associated with MSME taxpayer compliance (B = 0.048, β = 0.038, p = 0.732); H1 was not supported. In this sample, tax knowledge was not significantly associated with compliance after controlling for tax socialization and tax regulation. This finding differs from studies reporting significant positive associations between tax knowledge or understanding and compliance, including Perdana and Dwirandra (2020), Sofianti and Wahyudi (2022), Yuliani et al. (2024), and Sulistyowati and Nuryati (2024). It is consistent with Listya and Limajatini (2022) and Paulus and Tarmidi (2023), who reported no statistically significant association.

Respondents reported relatively high tax knowledge (M = 4.333, SD = 0.322), alongside a compliance mean of 4.050 (SD = 0.448). The relatively small dispersion in knowledge may have limited the measure's ability to distinguish respondents, but restricted variance or a ceiling effect was not directly tested and cannot be established as the explanation for the non-significant coefficient. Future studies could examine item distributions and recruit samples with a wider range of tax knowledge. The result is a contextual addition to mixed evidence; it does not demonstrate that tax knowledge is generally irrelevant or that Banda Aceh is a boundary condition, since this study did not compare regions or test moderation.

The Theory of Planned Behavior (TPB) is used here only as an interpretive perspective on compliance as behavior. Attitude, subjective norms, perceived behavioral control, and behavioral intention were not directly measured. Therefore, the coefficient does not test a TPB pathway from knowledge through these constructs to compliance. The empirical claim is limited to the direct statistical association between measured tax knowledge and reported compliance, conditional on the other predictors.

Tax socialization showed a positive and statistically significant association with compliance (B = 0.400, β = 0.293, p = 0.014), supporting H2. In the sample, higher reported tax socialization was associated with higher reported compliance after controlling for tax knowledge and tax regulation. Tax education, information dissemination, and communication by tax authorities may provide practical guidance about tax obligations and procedures. The finding indicates an association, however, and does not establish that socialization caused improved compliance.

From an Agency Theory perspective, tax socialization can be viewed as information sharing between taxpayers and tax authorities. Information about rights, obligations, and procedures may help address information gaps in the tax relationship (OECD, 2023). Yet information asymmetry, agency costs, and monitoring mechanisms were not directly measured, so the study does not empirically test these agency mechanisms. Likewise, although TPB offers a behavioral lens, its core constructs were not measured; the significant coefficient does not establish mediation through attitudes, norms, perceived control, or intentions.

The result is consistent with prior studies. Permata (2025) reported a positive and significant association between tax socialization and MSME compliance in Ponorogo (coefficient = 0.652, t = 7.671, p = 0.000). Wardani and Sari (2025) similarly reported a positive significant association in Ciputat (path coefficient = 0.264, p = 0.010). Together with the present result, these studies provide evidence of positive associations across different settings. Nevertheless, the psychological and institutional mechanisms underlying these associations require direct measurement and cannot be inferred from the current

regression alone.

Tax regulation had a positive but non-significant association with compliance (B = 0.247, β = 0.157, p = 0.182), so H3 was not supported. The result means that differences in the measured regulatory construct were not statistically associated with compliance after controlling for knowledge and socialization in this sample. It does not show that regulation is generally unrelated to compliance. Clear, understandable, and consistent rules may help taxpayers understand their obligations, but the present analysis did not establish a statistically significant relationship.

Wulandari et al. (2022) examined tax incentives and relaxation policies for MSMEs during the COVID-19 pandemic and highlighted implementation challenges involving information disparities, limited tax knowledge, and access to tax services. This provides context on policy implementation but does not directly establish the relationship tested here. Tax regulation had a high mean (M = 4.318, SD = 0.238), with limited response variation. Such restriction could reduce the ability to distinguish respondents, although a ceiling effect was not directly tested and remains a tentative possibility. Future research could use more differentiated regulatory measures and examine policy implementation, access to information, administrative support, and taxpayer understanding.

As with tax knowledge, TPB should not be interpreted as a tested mechanism linking regulation to attitude, subjective norms, perceived behavioral control, intention, or compliance. These constructs were not directly measured. The present result is limited to the direct statistical association between the regulation measure and self-reported compliance, controlling for the other two predictors.

Several limitations qualify the findings. The 100 participants were purposively selected NPWP-holding MSME taxpayers in Banda Aceh; most were women and employed one or two people. The sample cannot represent all local or regional MSMEs. Measures were self-reported rather than verified against filing or payment records, so compliance scores reflect reported behavior or perceptions, not audited compliance. The cross-sectional design also precludes temporal and causal conclusions.

Third, no formal expert review or pilot test preceded the main survey, and EFA/CFA was not conducted. Corrected item-total correlations and Cronbach's alpha provide post hoc evidence only; the relatively modest reliability for compliance (0.623) and socialization (0.672) may affect precision. Fourth, the NPWP item was included in the original compliance scale even though NPWP possession was required for eligibility. The item showed a corrected item-total correlation of 0.357, and deleting it yielded alpha of 0.404. A behavioral measure based on accurate calculation, timely payment, and timely filing is more appropriate for registered taxpayers, but the model must be re-estimated with that revised scale before robustness can be claimed.

Future research should use expert assessment and pilot testing, examine the measurement structure through EFA or CFA, and assess common-method bias using appropriate procedural and statistical approaches. Where feasible, probability-based sampling and multi-region designs could improve representativeness and test whether associations vary across institutional and socioeconomic contexts. Linking survey data to verified filing and payment records could reduce reliance on self-reports. Longitudinal or experimental designs could provide stronger evidence about temporal change and causal effects.

Future studies could examine tax morale, trust, perceived fairness, service quality, digital administration, financial literacy, and religious values. Directly measuring theoretical constructs would allow formal tests of whether attitudes, norms, perceived control, intentions, or information asymmetry help explain compliance.

Conclusion

The multiple linear regression model was statistically significant, F(3, 96) = 4.385, p = 0.006. Its R^2 was 0.121 and adjusted R^2 was 0.093, indicating that tax knowledge, tax socialization, and tax regulation jointly explained 12.1% of observed variation in MSME taxpayer compliance, or 9.3% after adjustment for the number of predictors. Tax socialization was positively and significantly associated with compliance (B = 0.400, β = 0.293, p = 0.014); therefore, H2 was supported. Tax knowledge (B = 0.048, β = 0.038, p = 0.732) and tax regulation (B = 0.247, β = 0.157, p = 0.182) were positive but not statistically significant; consequently, H1 and H3 were not supported. Although the overall model was significant, its explanatory capacity was limited. These results represent adjusted statistical associations within the purposively selected sample, not causal effects or statistically generalizable relationships. Because the study did not measure TPB constructs, it also does not establish a TPB-mediated pathway.

Because tax socialization was the only statistically significant predictor, tax authorities may prioritize continuous, accessible, practical outreach for MSMEs. Possible formats include tax clinics, information dissemination, webinars, interactive digital content, and direct consultations about calculating, paying, and reporting taxes. This recommendation follows the observed association and does not mean that the study proves socialization causes higher compliance.

Tax knowledge remains a possible supporting element of taxpayer education, but its coefficient was not significant in this sample. Accordingly, education-related recommendations should be cautious and informed partly by previous studies reporting positive associations (Saprudin, S. et al., 2020; Yuliani et al., 2024; Sulistyowati & Nuryati, 2024), rather than presented as a direct implication of these results. Tax regulation was also not significantly associated with compliance, so the findings do not justify recommending regulatory changes as a proven way to increase compliance. As a cautious practical consideration, authorities may explain regulatory changes clearly and provide guidance on applicable requirements; the relationship between such communication and compliance needs empirical assessment.

Digital tax administration, including the Coretax Administration System, may likewise be accompanied by accessible guidance and taxpayer assistance. This is a practical consideration, not a study finding, because digital administration was not measured in the model.

Author's Contribution Statement

Rahmah Yulianti conceived the research idea and established the study's overall direction. She developed the conceptual framework, formulated the approach to the research problem, and designed the methodology. She supervised the research process, helping maintain alignment between the objectives, methods, analysis, and interpretation. She interpreted the findings and prepared the original manuscript, bringing the research components together into a coherent academic account. She coordinated the revision process, considered the authors' input, and finalized the manuscript for publication. Her contributions covered the study's conception, methodological direction, interpretation and presentation of findings, and preparation of the final version.

Maisur contributed to the research design and questionnaire development. His work supported the operationalization of the research variables and preparation of the instrument used to

collect responses. He participated in data collection and conducted statistical analysis using multiple linear regression. He helped interpret the empirical findings in relation to the research questions. In addition, he reviewed the methodology section and contributed to its clarity and consistency with the procedures undertaken. These contributions supported the connection between research design, collected data, analytical approach, and presentation of the results.

Meutia Handayani contributed to the literature review and development of the theoretical framework. She helped establish the scholarly context and frame the research in relation to relevant literature and concepts. She also contributed to validation of the research instruments and interpretation of the findings. Her work included critically reviewing the manuscript and providing intellectual input to strengthen its academic quality. Through these contributions, she helped improve the relationship between the theoretical discussion, research instruments, and interpretation of results, while supporting a clear academic presentation. Her critical input was intended to make the manuscript's academic reasoning more precise and coherent.

Agustina contributed to data collection and data verification. She assisted in checking the collected information and preparing tables and figures. She also managed references, formatted the manuscript in accordance with the journal's guidelines, and undertook language editing. These tasks supported the accuracy and consistency of the manuscript's presentation and helped organize its tables, figures, citations, and formatting for submission. Agustina further assisted with revisions arising from the authors' discussions, helping incorporate agreed changes into the document. Her support concerned presentation and revision of the manuscript, alongside the research tasks identified above.

Hafidh Maksum contributed to interpretation of the findings and critically reviewed the discussion and conclusion sections. His review considered how the findings were explained and how the conclusions followed from the reported results. He provided intellectual input to strengthen the theoretical and practical implications and helped revise the manuscript to improve its academic quality and coherence. These contributions supported a considered discussion of the findings and their implications while maintaining consistency between the empirical results and the manuscript's claims. He also contributed to revision of the manuscript's final interpretive sections.

Anwar reviewed the manuscript in its entirety and evaluated consistency between the research framework and conclusions. He provided critical suggestions during revision and helped refine the final manuscript. His review addressed clarity, coherence, and alignment with the journal's publication standards. By examining the manuscript as a complete work, he helped identify areas where the presentation could be clearer and the relationship between framework, findings, and conclusions more consistent. His contribution supported the final refinement of the paper before publication. His suggestions formed part of the collective revision process.

All authors have read and approved the final version of the manuscript. They agree to be accountable for all aspects of the work and to ensure that questions concerning the accuracy or integrity of any part of the research are appropriately considered. This statement recognizes each author's specific contributions and their collective responsibility for the work.

Conflict of Interest

The authors declare that they have no conflicts of interest regarding publication of this article. No competing interest is declared in relation to the work presented in the manuscript.

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