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The Moderating Role of Tax Sanctions on the Effect of Tax and Accounting Knowledge on MSME Taxpayer Compliance

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) have consistently played a vital role in Indonesia's economic resilience and in stabilizing the economy amidst national financial instability, particularly during times of crisis. This study investigates the influence of tax knowledge, accounting knowledge, and tax sanctions on MSME taxpayer compliance in Jambi City, Indonesia. Furthermore, it examines whether tax sanctions moderate the relationship between knowledge variables and taxpayer compliance. Employing a quantitative approach, the study collected data from 40 MSME respondents through purposive sampling. Multiple linear regression analysis was used to test the proposed hypotheses. The results indicate that tax knowledge does not significantly affect tax compliance, while accounting knowledge exerts a significant positive influence. Collectively, tax knowledge, accounting knowledge, and tax sanctions significantly affect taxpayer compliance. Additionally, tax sanctions do not moderate the relationship between tax knowledge and tax compliance but do moderate the relationship between accounting knowledge and tax compliance. These findings suggest the importance of strengthening accounting literacy and the strategic implementation of tax sanctions to improve compliance behavior among MSMEs.

Keywords: MSMEs, tax compliance, tax knowledge, accounting knowledge, tax sanctions, moderating effect

Introduction

Tax revenue plays a pivotal role in supporting a country's economic development and public service provision. In Indonesia, taxes are a primary source of state revenue, making taxpayer compliance an essential factor in achieving fiscal sustainability. However, the level of tax compliance among Micro, Small, and Medium Enterprises (MSMEs) remains a persistent challenge. MSMEs, while contributing significantly to national employment and economic output, often exhibit low compliance due to limited knowledge, inadequate accounting practices, and perceived weaknesses in enforcement mechanisms.

Tax compliance refers to the extent to which taxpayers fulfill their legal tax obligations and exercise their taxation rights as stipulated by law (Ruky et al., 2018). One measurable indicator of tax compliance is the tax ratio, the proportion of tax revenue to Gross Domestic Product (GDP). A low tax ratio indicates suboptimal tax collection performance and potentially reflects widespread non-compliance within the taxpayer base. For a developing country like Indonesia, improving tax compliance, particularly within the MSME sector, is crucial to broadening the tax base and ensuring sustainable fiscal capacity.

Several factors have been identified as influencing taxpayer compliance, including tax knowledge, accounting knowledge, and tax sanctions. The relatively low compliance rate among Micro, Small, and Medium Enterprises (MSMEs) in Indonesia is often associated with inadequate tax knowledge, limited outreach or education programs, and a general lack of awareness regarding tax obligations. These conditions may lead taxpayers to default on their fiscal responsibilities. This notion is supported by the findings of Imaniati and Isroah (2016), which demonstrate a significant relationship between tax understanding and taxpayer compliance.

Furthermore, accounting knowledge is another critical determinant of compliance. An individual's ability to understand financial record-keeping, classification, summarization, reporting, and interpretation of financial data reflects the level of their accounting literacy. According to Pakpahan (2015), this form of literacy, particularly in the context of tax-related accounting, contributes substantially to the fulfillment of corporate tax obligations. In addition, tax sanctions serve as a legal enforcement mechanism to ensure adherence to tax regulations. They function as a deterrent by imposing penalties on non-compliant taxpayers, thereby reinforcing the authority of fiscal norms. As noted by Herdianto (2021), strict enforcement of tax penalties by tax authorities significantly enhances taxpayer compliance, as it discourages violations and promotes adherence to statutory tax obligations.

The Minister of Cooperatives and Small and Medium Enterprises (Menkop UKM) has stated that Micro, Small, and Medium Enterprises (MSMEs) possess substantial potential as contributors to national tax revenues. However, data from the Directorate General of Taxes, Ministry of Finance (2019), indicates that the final income tax (PPh) contribution from MSMEs amounted to only IDR 7.5 trillion, representing approximately 1.1% of the total tax revenue of IDR 711.2 trillion in the same year. This data underscores the relatively low tax contribution made by the MSME sector.

Such a phenomenon appears counterintuitive, as it is generally assumed that a growing number of MSMEs should correlate with increased tax revenue from the sector. The issue of low MSME tax contribution is also evident at the regional level, including in Jambi City. According to data obtained from the Pratama Tax Office (KPP) Jambi Telanaipura, over the past three consecutive years, the number of MSME taxpayers fulfilling their tax obligations has remained below 50% and has shown a declining trend. The following data highlights the number of registered MSMEs and the proportion of those actively complying with their tax obligations during the observed period.

Stewardship Theory According to (Donaldson & Davis, 1991), as cited in (Purnamawati et al., 2017), stewardship theory illustrates a governance framework where managers or agents are intrinsically motivated to act in the best interest of the organization, aligning their behavior with collective goals rather than individual gains. The theory posits that organizational success is closely linked to stakeholder satisfaction, and that agents (e.g., managers or public officials) will act as stewards who prioritize long-term value creation for all parties involved. This theoretical perspective contrasts with agency theory, which assumes that agents tend to act opportunistically unless monitored or incentivized.

In the realm of public sector administration, particularly in tax management, stewardship theory is a relevant lens to understand the role of government and tax authorities in fostering taxpayer compliance. Public officials, viewed as stewards, are expected to manage public resources and enforce regulations not merely through coercive measures, but through strategies that promote awareness, education, and voluntary compliance (Purnamawati et al., 2017). For example, in the case of restaurant taxpayers, tax sanctions are not only deterrents but serve to guide proper taxpayer behavior in accordance with prevailing tax regulations.

Furthermore, tax socialization efforts such as community outreach, education campaigns, and guidance on taxation procedures play a pivotal role in increasing tax knowledge and building trust between tax authorities and taxpayers (P. R. Sari & Yasa, 2019). These efforts reflect the stewardship approach in which government institutions act responsibly to support taxpayers, promote fairness, and strengthen compliance through informed participation. The stewardship model underlines the dual function of public administrators: enforcement through appropriate sanctions and empowerment through education. This dual approach is essential in achieving sustained tax compliance, particularly among Micro, Small, and Medium Enterprises (MSMEs), where compliance is often influenced by the level of knowledge, perceived fairness, and the government's commitment to serving public interests.

Tax Taxation plays a central role in the fiscal and administrative functions of a modern state. According to Soemitro, as cited in (Mardiasmo, 2018), tax is defined as a mandatory contribution imposed by the government on its citizens, which is collected without any direct reciprocal benefit. This compulsory payment is grounded in statutory regulations and serves as a key instrument for financing public expenditures that benefit society collectively. The coercive nature of taxation highlights the binding legal obligation imposed on individuals and entities to support the operations and development responsibilities of the state. Echoing this view, Waluyo (2017) describes tax as a non-refundable mandatory payment to the government, imposed on both individuals and corporate bodies, in accordance with tax legislation. These contributions are not directly tied to specific government services received by taxpayers but are rather used to meet broader social and economic objectives, including infrastructure development, education, healthcare, and public security.

Taxation, therefore, functions not only as a tool for resource mobilization, but also as a mechanism for economic redistribution and regulatory control. It reflects the social contract between the government and its citizens, wherein the state is entrusted with managing public welfare using funds derived from taxpayers. Additionally, effective taxation promotes fiscal independence, enabling governments to reduce reliance on foreign debt or aid. Beyond its financial function, tax policy can be strategically employed to influence behavior, such as discouraging the consumption of harmful goods through excise taxes or incentivizing business investment through tax relief programs. Thus, understanding the conceptual and legal foundations of taxation is essential for fostering compliance and building a tax system that is transparent, equitable, and efficient.

Tax Compliance According to (Lopez-Luzuriaga & Scartascini, 2019), taxpayer compliance is defined as the state in which taxpayers fulfill all their tax obligations and simultaneously exercise their tax rights in accordance with prevailing laws and regulations. Compliance is not merely the act of payment but also encompasses timely reporting and accurate disclosure, which collectively contribute to the effectiveness of the tax system. The level of taxpayer compliance is fundamentally influenced by the conditions and efficiency of the tax administration system, including the accessibility and quality of tax services, taxpayer education, and the rigor of enforcement mechanisms (Kogler et al., 2020). An effective tax administration system facilitates voluntary compliance by reducing compliance costs and increasing taxpayers' trust in the authorities.

Furthermore, tax compliance involves a behavioral dimension, reflecting taxpayers' attitudes and willingness to obey tax laws and regulations (Mansur et al., 2021); (Mansur et al., 2023); (Safelia & Hernando, 2023). (Rahayu, 2017) conceptualizes tax compliance as the attitude of submission and adherence toward tax regulations, which is critical in ensuring the sustainability of public finance. Compliance is influenced not only by external factors such as audits and sanctions but also by intrinsic factors including taxpayer awareness, moral obligation, and perceived fairness of the tax system. Therefore, fostering compliance requires a comprehensive approach that integrates administrative efficiency, taxpayer education, and enforcement policies to create an environment conducive to voluntary compliance.

Tax Knowledge Understanding is a process, method, or action of perceiving or observing. In the context of tax audit standards, understanding is intended to provide normative concepts and fundamental elements related to the mechanisms and series of activities undertaken to assess compliance. It also involves the extent to which the legal basis is known by taxpayers or auditors in enforcing strict compliance policies with tax obligations in accordance with tax laws and regulations (Djatmiko, 2016). Knowledge and understanding of tax regulations imply that taxpayers are aware of tax provisions and apply this knowledge in fulfilling their tax payment obligations (W. A. N. U. Agun et al., 2022). The factors of tax knowledge and understanding aim to increase individual awareness of their rights and responsibilities, as well as the benefits of taxation, thereby encouraging individuals to act honestly and strive to comply with applicable tax regulations.

Accounting Knowledge Accounting knowledge significantly influences taxpayer compliance, particularly in relation to the tax liabilities that must be paid (Trihatmoko & Mubaraq, 2020). Taxpayer compliance is largely a result of taxpayers' adequate understanding of accounting principles, which ensures accurate and reliable financial outcomes, thereby increasing taxpayers' willingness to fulfill their tax payment and reporting obligations. The integration of accounting knowledge and tax regulations forms a crucial foundation for tax compliance. Understanding proper accounting procedures enables business owners to optimally measure income and expenses generated from their operations, allowing for an accurate determination of business profits. Consequently, business owners can calculate and remit the appropriate amount of tax correctly and timely. Moreover, knowledge of tax regulations is essential, as it guides entrepreneurs on the correct and proper methods for tax payments (Sumianto & Kurniawan, 2015). This comprehensive understanding helps reduce errors in tax reporting and fosters greater compliance with tax laws.

Tax Sanction According to (I. G. N. Agun et al., 2022), tax sanctions are punitive measures imposed on individuals or entities that violate tax laws, serving as deterrents to encourage compliance by signaling that non-compliance will result in legal or financial consequences. These sanctions ensure that tax regulations and norms are respected and adhered to, functioning both as punitive and preventive tools to discourage unlawful tax behaviors (Mardiasmo, 2018). Within the framework of deterrence theory, the perceived likelihood and severity of sanctions influence taxpayer behavior, where stronger enforcement and heavier penalties increase the risk of non-compliance, thereby motivating voluntary compliance. The effectiveness of these sanctions depends on consistent enforcement, taxpayer awareness, and the perceived fairness of the tax system. Tax authorities implement various forms of sanctions, including fines, penalties, interest charges, and criminal prosecution, which, when combined with taxpayer education and efficient administration, create a comprehensive strategy to enhance compliance. Nevertheless, scholars emphasize that sanctions should be balanced with positive incentives and supportive services to foster trust and voluntary compliance between taxpayers and authorities.

Hypotheses Development

Tax Knowledge and Taxpayer Compliance ax knowledge is a fundamental factor that significantly influences taxpayer compliance, particularly within the Micro, Small, and Medium Enterprises (MSMEs) sector. Adequate understanding of taxation enables taxpayers to comprehend their fiscal rights and obligations, thereby supporting accurate and timely tax reporting and payment (Palil & Mustapha, 2011). This knowledge encompasses not only awareness of tax laws but also the procedural aspects such as registration, calculation, payment, and reporting (Kasipillai & Abdul-Jabbar, 2006).

According to (Lopez-Luzuriaga & Scartascini, 2019), the level of tax compliance tends to increase in parallel with taxpayers' understanding of applicable tax regulations, which implies that a well-informed taxpayer is more likely to comply voluntarily. This is particularly relevant in the context of MSMEs, where limited resources often hinder proper financial and tax management. Therefore, empowering business owners with tax-related knowledge can bridge the gap between legal obligations and actual compliance behavior (Saad, 2014).

Empirical evidence further supports this relationship, indicating that tax literacy contributes to reducing tax evasion and enhancing compliance among small business taxpayers (McKerchar & Evans, 2009). In the case of Jambi City, where MSMEs are rapidly developing, strengthening tax knowledge becomes a strategic approach to improving compliance rates. Accordingly, this study hypothesizes that tax knowledge has a significant positive effect on MSME taxpayer compliance in Jambi City.

H1: The Effect of Tax Knowledge on MSME Taxpayer Compliance in Jambi City

Accounting Knowledge and Taxpayer Compliance Accounting knowledge is one of the key factors influencing taxpayer compliance, particularly among MSMEs (D. Sari, 2019). Adequate understanding of basic accounting principles enables taxpayers to systematically and accurately record, classify, and report financial transactions (Susetyo & Pratama, 2020). This capability is crucial in calculating tax liabilities, as errors in financial recording or reporting can lead to discrepancies in tax computations, which in turn may result in non-compliance (Darmini & Ramantha, 2021). Accounting knowledge contributes to improved tax compliance by enhancing the accuracy of tax reporting. Taxpayers with higher levels of accounting knowledge tend to better understand tax regulations, legally benefit from available incentives, and fulfill both administrative and substantive tax obligations in a timely manner (Mulyani & Novita, 2020). Furthermore, accounting knowledge minimizes the risk of mistakes or negligence in tax reporting, which is often a primary cause of non-compliance, whether intentional (voluntary non-compliance) or unintentional non-compliance (Rochmah, 2018).

In the context of MSMEs in Jambi City, accounting knowledge becomes even more relevant as many business actors still face challenges in maintaining accurate financial records and preparing tax reports (Kusuma & Hidayat, 2022). The lack of accounting capacity may serve as a structural barrier to tax compliance (Yuliani et al., 2020). Therefore, it is essential to empirically examine whether improvements in accounting knowledge significantly influence the level of tax compliance among MSME taxpayers. Based on the above discussion, the following hypothesis is proposed:

H2: The Effect of Accounting Knowledge on MSME Taxpayer Compliance in Jambi City

Tax Knowledge, Accounting Knowledge and Taxpayer Compliance Tax knowledge and accounting knowledge are two interrelated cognitive domains that play a pivotal role in determining taxpayers' ability to comply with tax regulations, especially within the Micro, Small, and Medium Enterprises (MSMEs) sector. Tax knowledge equips taxpayers with the necessary understanding of tax laws, regulations, procedures, and obligations, thereby reducing errors and fostering voluntary compliance. Meanwhile, accounting knowledge enables individuals to systematically record, summarize, and report financial transactions in a manner that supports accurate tax reporting (Susetyo & Pratama, 2020); (Trihatmoko & Mubaraq, 2020).

The interaction between these two forms of knowledge is particularly critical for MSME taxpayers who often act as both business operators and financial decision-makers. When tax knowledge is complemented by a sound understanding of accounting principles, taxpayers are more capable of interpreting fiscal policies, calculating liabilities accurately, and submitting reports in a timely and compliant manner (Mulyani & Novita, 2020). In contrast, the lack of either component may lead to reporting discrepancies, underpayment of taxes, or even unintentional non-compliance (Rochmah, 2018).

Several studies emphasize that while tax knowledge positively affects compliance, its impact is often amplified when accompanied by adequate accounting competencies (Darmini & Ramantha, 2021); (Yuliani et al., 2020). This integrated cognitive capacity not only strengthens procedural compliance but also enhances taxpayers' confidence and trust in the tax system (Palil & Mustapha, 2011). In the context of MSMEs in Jambi City, where many entrepreneurs face challenges in both taxation and financial reporting, the synergy between tax and accounting knowledge is expected to yield a more significant impact on compliance behavior. Based on this conceptual framework, the following hypothesis is formulated:

H3: The Simultaneous Effect of Tax Knowledge and Accounting Knowledge on MSME Taxpayer Compliance in Jambi City

Moderating Role of Tax Sanctions on the Relationship between Tax Knowledge and Taxpayer Compliance Tax sanctions play a vital role within the tax compliance framework, functioning not only as punitive instruments but also as preventive mechanisms aimed at fostering responsible taxpayer behavior (Mardiasmo, 2018); (W. A. N. U. Agun et al., 2022). These sanctions are strategically implemented to create a deterrent effect, discouraging both intentional and unintentional non-compliance by imposing tangible consequences for violations of tax laws (Nurmantu, 2019); (W. A. N. U. Agun et al., 2022). From the lens of economic deterrence theory, the perceived probability of detection and the severity of penalties are fundamental factors influencing taxpayers' decisions to comply or evade taxes (Allingham & Sandmo, 1972); (Kirchler, 2007). When tax sanctions are perceived as credible, proportionate, and consistently enforced, they can elevate the psychological and financial cost of non-compliance, thereby encouraging voluntary adherence to tax regulations (Torgler, 2011); (Fauziati et al., 2023).

In this context, tax knowledge and tax sanctions may interact in a synergistic manner, particularly among Micro, Small, and Medium Enterprises (MSMEs), where compliance behavior is often shaped by both cognitive awareness and external enforcement (Palil & Mustapha, 2011);

(Yuliani et al., 2020). Taxpayers who possess sufficient knowledge about tax procedures, laws, and rights are generally more capable of identifying their obligations and understanding the implications of non-compliance (Eriksen & Fallan, 1996); (Nugraha & Putri, 2023). However, tax knowledge alone may not be sufficient to guarantee full compliance unless it is reinforced by external mechanisms such as audits or the threat of sanctions (OECD, 2019); (Fauziati et al., 2023). The existence of tax sanctions, when perceived as firm and fair, can reinforce the behavioral intentions of knowledgeable taxpayers by heightening their awareness of legal consequences (Kirchler et al., 2008); (I. G. N. Agun et al., 2022). This suggests that sanctions not only function as punitive tools but also serve as motivational stimuli for taxpayers who understand the tax system but require an external push to act in accordance with it.

Consequently, tax sanctions can be viewed as a moderating variable in the relationship between tax knowledge and taxpayer compliance. In settings where tax enforcement is strong and consistent, the positive influence of tax knowledge on compliance is likely to be amplified, since well-informed taxpayers are both cognitively equipped and externally compelled to fulfill their obligations (Fauziati et al., 2023). Conversely, in jurisdictions where sanctions are weak or inconsistently applied, the motivational impact of tax knowledge may be undermined, potentially resulting in lower compliance even among well-informed individuals (OECD, 2019); (Yuliani et al., 2020). Based on this reasoning, the following hypothesis is proposed:

H4: The Moderating Role of Tax Sanctions on the Relationship between Tax Knowledge and MSME Taxpayer Compliance in Jambi City

Moderating Role of Tax Sanctions on the Relationship between Accounting Knowledge and MSME Taxpayer Compliance In addition to their moderating role in the relationship between tax knowledge and compliance, tax sanctions are also theorized to influence how accounting knowledge translates into actual taxpayer behavior (Mardiasmo, 2018); (Fauziati et al., 2023). Accounting knowledge equips taxpayers especially MSME actors with the ability to systematically record, classify, and summarize financial transactions, which serves as the foundation for accurate tax calculation and reporting (Trihatmoko & Mubaraq, 2020); (Nugraha & Putri, 2023). However, the mere possession of accounting knowledge may not automatically lead to compliance if there is no external stimulus or enforcement mechanism that encourages its application in fulfilling tax obligations (OECD, 2019); (Kirchler et al., 2008). In this context, tax sanctions serve not only as corrective instruments but also as motivational tools that heighten the behavioral response of taxpayers with sound accounting skills (I. G. N. Agun et al., 2022); (Torgler, 2011).

Therefore, MSMEs with good accounting literacy may become more compliant when tax sanctions are effectively communicated and implemented, as the risk of legal consequences aligns with their awareness of taxable financial flows (Fauziati et al., 2023); (Yuliani et al., 2020). On the contrary, in the absence of strong enforcement, accounting knowledge alone might be insufficient to induce compliance, as the cost-benefit calculation of evasion becomes less unfavorable (OECD, 2019); (Torgler & Schaltegger, 2005). Hence, tax sanctions are proposed to play a moderating role in the relationship between accounting knowledge and MSME taxpayer compliance. When applied consistently and transparently, sanctions are expected to strengthen the behavioral effect of accounting knowledge on tax compliance by increasing the psychological and financial risks associated with evasion (Palil & Mustapha, 2011); (Fauziati et al., 2023). Based on this reasoning, the following hypothesis is proposed.

H5: The Moderating Role of Tax Sanctions on the Relationship between Accounting Knowledge and MSME Taxpayer Compliance in Jambi City

Research Methods

This study utilizes a quantitative research approach and is categorized as explanatory research due to its aim to examine causal relationships among variables. The target population comprises MSMEs located within Jambi City. To ensure the relevance and accuracy of data, purposive sampling was employed, selecting respondents who meet specific criteria: owning a culinary business, operating from a fixed business location, possessing a valid Tax Identification Number (NPWP), and being domiciled within Jambi City. This sampling technique allows for focused data collection from participants most representative of the study objectives. Furthermore, adhering to methodological rigor for multivariate statistical analyses such as multiple regression or correlation, the sample size was determined based on the rule of thumb requiring a minimum of ten respondents per variable. Given that this study involves four independent variables, the minimum sample size was set at 40 respondents, thereby ensuring sufficient statistical power to detect meaningful relationships.

The data collection methods employed in this study include Library Research and Online Research. Library research was conducted to gather relevant theories and data necessary for the study by reviewing various reading materials available in libraries, such as books, reports, and other documents closely related to the research topic. This approach aids the researcher in comprehensively understanding the subject matter and supporting the research objectives. Additionally, data collection involved sourcing secondary data from pertinent websites to obtain further literature, reviews, and other relevant information related to the study. At this stage, the researcher specifically collected secondary data in the form of PDF documents.

The data analysis technique employed in this study is multiple linear regression analysis, which is particularly suitable given the causal nature of the research hypotheses. Causal hypotheses posit presumed cause-and-effect relationships between independent and dependent variables, aiming to determine how changes in predictor variables influence the outcome variable (Kusumastuti et al., 2020). Multiple linear regression allows for the simultaneous examination of the effect of several independent variables on a single dependent variable, providing a comprehensive understanding of their relative contributions and predictive power. This method also facilitates the identification of statistically significant predictors, enabling researchers to make inferences about the strength and direction of relationships within the conceptual framework. The data collected were processed and analyzed using SPSS software, a robust statistical package that offers advanced capabilities for regression diagnostics, model fitting, and hypothesis testing, thereby ensuring the accuracy, validity, and reliability of the analysis results.

Results And Discussion

Multiple Linear Regression Analysis The results of the multiple linear regression analysis for Model I are presented as follows:

Table 1. Results of Multiple Linear Regression Analysis for Model I

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	-362.870	127.831		-2.839	.008
	Tax knowledge	-3.698	4.154	-2.620	-.890	.380
	Accounting knowledge	20.686	7.084	9.819	2.920	.006
	Tax sanction	15.266	5.512	6.078	2.770	.009

a. Dependent Variable: Taxpayer Compliance

The regression results indicate that accounting knowledge (β = 9.819, p = 0.006) and tax sanctions (β = 6.078, p = 0.009) have a statistically significant positive effect on taxpayer compliance among MSMEs in Jambi City. This suggests that higher accounting knowledge and stricter tax sanctions are associated with increased compliance. On the other hand, tax knowledge shows a negative but statistically insignificant effect (β = -0.890, p = 0.380) on taxpayer compliance, indicating that in this sample, tax knowledge alone does not significantly influence compliance behavior.

Based on the estimated parameters of the regression model, the regression equation used in this study can be expressed as follows:

$$Y = a + ß_1 \text{ M } X_1 + ß_2 X_2 + ß_3 X_3 + e$$

Taxpayer Compliance = -362.870 - 3.698 + 20.686 + 15.266 + e

Table 2. Results of Multiple Linear Regression Analysis for Model II

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	-362.870	127.831		-2.839	.008
	Total tax knowledge	-3.698	4.154	-2.620	-.890	.380
	X1*M	.184	.180	5.133	1.020	.315

The regression output for Model II indicates that neither total tax knowledge (β = -2.620, p = 0.380) nor the interaction term (β = 5.133, p = 0.315) between tax knowledge and the moderating variable shows a statistically significant effect on taxpayer compliance. This suggests that tax knowledge alone and its interaction with the moderator variable do not significantly predict compliance behavior in this model. Based on the estimated parameters from Model II using Moderated Regression Analysis (MRA), the regression equation employed in this study can be formulated as follows:

$$Y = a + b1X1 + b1(X1*M) + e$$

Taxpayer compliance = -362.870 - 3.698 + 0.184 + e.

Table 3. Results of Multiple Linear Regression Analysis for Model III

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	-362.870	127.831		-2.839	.008
	Total accounting knowledge	20.686	7.084	9.819	2.920	.006
	X2*M	-.838	.305	-15.231	-2.750	.009

The regression results for Model III demonstrate that total accounting knowledge has a significant positive effect on taxpayer compliance (β = 9.819, p = 0.006). Moreover, the interaction term between accounting knowledge and the moderator variable (β = -15.231, p = 0.009) is statistically significant and negatively influences compliance. This indicates that the moderating variable negatively moderates the relationship between accounting knowledge and taxpayer compliance, suggesting that as the moderator increases, the positive effect of accounting knowledge on compliance diminishes. Based on the estimated parameters from Model III using Moderated Regression Analysis (MRA), the regression equation utilized in this study can be expressed as follows:

$$Y = a + b2X2 + b2(X2*M) + e$$

$$\text{Taxpayer compliance} = -362.870 + 20.686 - 0.838 + e$$

Classic Assumption

Normality Test The normality test is a fundamental diagnostic procedure employed to evaluate whether the residuals of a regression model are normally distributed—a key assumption underpinning the validity of parametric statistical analyses, particularly in multiple linear regression. Ensuring normally distributed residuals enhances the reliability of hypothesis testing and the accuracy of confidence intervals. Residuals that adhere to a normal distribution suggest that the model's estimations are unbiased and efficient. The results of the normality assessment are presented in the following section.

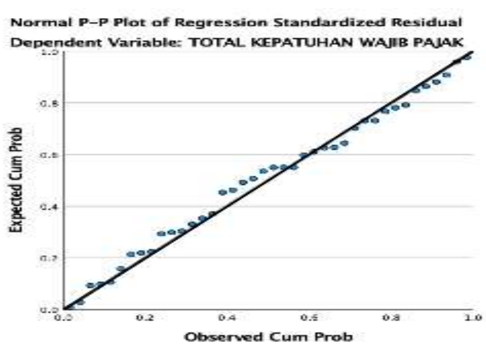

Figure 1. Normality Test Results

Figure 1 displays the result of the normality test using a Normal P-P Plot of standardized residuals for the dependent variable "Total Taxpayer Compliance." The plot shows that most of the data points lie close to the diagonal line, indicating that the residuals are approximately normally distributed. This suggests that the regression model satisfies the normality assumption, which is essential for ensuring the validity of statistical inference in linear regression analysis.

Multicollinearity Test Multicollinearity testing is an essential diagnostic procedure in multiple regression analysis that aims to determine whether independent variables in a regression model are highly correlated with one another. In an ideal regression model, each predictor variable should contribute unique and independent information to explain the variance in the dependent variable. When multicollinearity is present, it becomes difficult to ascertain the individual effect of each predictor because of the high intercorrelation, which can inflate the standard errors of the coefficients, reduce statistical power, and lead to unstable and unreliable parameter estimates. One of the most commonly used methods to detect multicollinearity is the Variance Inflation Factor (VIF), where a VIF value exceeding 10 is often considered indicative of serious multicollinearity, although thresholds may vary depending on the research context. The absence of multicollinearity is a prerequisite for generating robust and interpretable regression results.

Table 4. Multicollinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1	0,457	2,189
	X2	0,683	1,463
	M	0,568	1,761

Based on the results of the multicollinearity test presented in the table, the Variance Inflation Factor (VIF) values for all independent variables X1 (Tax Understanding), X2 (Accounting Understanding), and M (Tax Sanctions) are below the commonly accepted threshold of 10. Specifically, X1 has a VIF of 2.189, X2 has a VIF of 1.463, and M has a VIF of 1.761. Additionally, all tolerance values are above 0.1, indicating a low level of multicollinearity among the predictor variables. These results suggest that there is no significant multicollinearity in the regression model, and therefore, the independent variables can be considered to contribute uniquely and independently to the explanation of the dependent variable, taxpayer compliance.

Autocorrelation Test The autocorrelation test aims to determine whether there is a correlation between the residuals (disturbance errors) in a linear regression model across time periods specifically, whether the error term in period t is correlated with the error term in period t-1. This test is particularly important in time-series and panel data analysis because the presence of autocorrelation violates one of the classical assumptions of Ordinary Least Squares (OLS) regression, which assumes that residuals are independently distributed. If autocorrelation exists, it may result in underestimated standard errors, leading to overestimated t-statistics and invalid inference. The most common methods for detecting autocorrelation include the Durbin-Watson (DW) test and the Breusch-Godfrey test. Below are the results of the autocorrelation test conducted for this study.

Table 5. Autocorrelation Test Result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0,731[a]	0,535	0,496	1,957	2,086

A. Predictors: (Constant), Total Tax Sanction, Total Accounting Knowledge, Total Tax Knowledge
B. Dependent Variable: Total Taxpayer Compliance

Based on the model summary above, the DW value is 2.086. In regression analysis, a DW value close to 2 indicates that there is no autocorrelation in the residuals. Typically, DW values between 1.5 and 2.5 are considered acceptable and suggest that the assumption of independent residuals holds true. Therefore, it can be concluded that the regression model does not exhibit significant autocorrelation, and the error terms are assumed to be independent across observations. This supports the reliability of the regression estimates in this study.

Heteroskedasticity Test Heteroskedasticity testing aims to determine whether there is an unequal variance of residuals across observations in a regression model. In classical linear regression assumptions (specifically under the Gauss-Markov theorem), one key requirement is that the variance of the error terms should be constant this condition is known as homoskedasticity. When the variance of residuals varies across levels of an independent variable or across observations, the condition is violated, resulting in heteroskedasticity. This issue can lead to inefficient estimators and biased statistical inference, such as incorrect standard errors, which can affect hypothesis testing. Heteroskedasticity can be identified using graphical methods (e.g., scatterplots of residuals) or formal statistical tests (e.g., Breusch-Pagan or White tests).

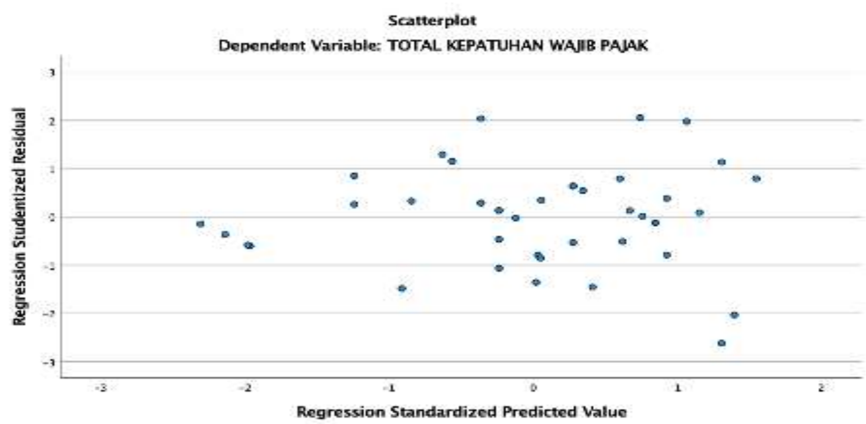

Figure 2. Heteroskedasticity Test Result

Based on the results of the heteroscedasticity test, it can be seen that there is no clear pattern, and the points are spread above and below the number 0 on the Y axis, so there is no heteroscedasticity.

Hypotheses Test Result

F Test The F-test, or analysis of variance (ANOVA) in the context of multiple linear regression, is employed to determine whether the independent variables exert a simultaneous and statistically significant influence on the dependent variable. In this study, the F-test is used to examine whether tax knowledge and accounting knowledge, taken together, significantly affect taxpayer compliance.

Table 6. F Test Result

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	158.540	3	52.847	13.800	<.001[b]
	Residual	137.860	36	3.829		
	Total	296.400	39			

a. Dependent Variable: Total Taxpayer Compliance

b. Predictors: (Constant), X2*M, Total Tax Knowledge, Total Accounting Knowledge, Total Tax Sanction, X1*M

Based on the results of the simultaneous hypothesis testing using the F-test, a comparison was made between the calculated F-value (F-calculated) and the critical F-value (F-table) at a significance level (α) of 0.05 or 5%. The analysis yielded an F-calculated value of 13.800, while the F-table value, at α = 0.05 with numerator degrees of freedom (df_1) = 3 and denominator degrees of freedom (df_2) = 36, was 2.494. Since F-calculated (13.800) > F-table (2.494), and the p-value (0.001) < 0.05, the decision is to reject the null hypothesis (H_0) and accept the alternative hypothesis (H_1). Therefore, it can be concluded that the independent variables have a statistically significant simultaneous effect on the dependent variable in the tested regression model.

T Test The t-test, also referred to as a partial test, is conducted to examine the extent to which each independent variable individually exerts a statistically significant effect on the dependent variable within a regression model. In other words, the t-test assesses whether each predictor variable contributes significantly to the explanation of the dependent variable, controlling for the influence of the other independent variables. The results of the t-test in this study are presented as follows:

Table 7. T Test Result

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	-362.870	127.831		-2.839	.008
	pemahaman pajak	-3.698	4.154	-2.620	-.890	.380
	pemahaman akuntansi	20.686	7.084	9.819	2.920	.006
	sanksi pajak	15.266	5.512	6.078	2.770	.009
	X1*M	.184	.180	5.133	1.020	.315
	X2*M	-.838	.305	-15.231	-2.750	.009

a. Dependent Variable: Kepatuhan wajib pajak

Based on the results of the partial analysis through the t-test, the t-table value was first determined using the degrees of freedom (df) = N – 1 = 40 – 1 = 39 at a significance level of 5%, resulting in a critical value of 2.022. The results are explained as follows:

The Influence of Tax Knowledge on Taxpayer Compliance (H1). The calculated t-value for tax knowledge is -0.890, which is less than the t-table value of 2.022 (t-calculated < t-table), and the p-value is 0.38 > 0.05. Thus, the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected, indicating that tax knowledge has no significant influence on taxpayer compliance in this study.

The Influence of Accounting Knowledge on Taxpayer Compliance (H2). The t-value for accounting knowledge is 2.920, which is greater than the t-table value of 2.022 (t-calculated > t-table), and the p-value is 0.006 < 0.05. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, indicating that accounting knowledge has a significant influence on taxpayer compliance in this study.

The Influence of Tax Knowledge on Taxpayer Compliance Moderated by Tax Sanctions (H4). The t-value for tax knowledge moderated by tax sanctions is 1.020, which is lower than the t-table value of 2.022 (t-calculated < t-table), and the p-value is 0.315 > 0.05. As a result, the null hypothesis (H_0) is accepted and the alternative hypothesis (H_1) is rejected, implying that tax sanctions do not moderate the relationship between tax knowledge and taxpayer compliance in this study.

The Influence of Accounting Knowledge on Taxpayer Compliance Moderated by Tax Sanctions (H5). The t-value for accounting knowledge moderated by tax sanctions is -2.750, which is lower than the t-table value of 2.022 (t-calculated < t-table), and the p-value is 0.009 < 0.05. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, indicating that tax sanctions do moderate the relationship between accounting knowledge and taxpayer compliance in this study.

Coefficient Determination Test The Coefficient of Determination Test is conducted to determine the extent to which the independent variables can explain the variance in the dependent variable. The results of the coefficient of determination test are presented as follows:

Table 8. Coefficient Determination Test Result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.800[a]	.640	.588	1.771	1.946

a. Predictors: (Constant), X2*M, Total Pemahaman Pajak , Total Pemahaman Akuntansi , Total Sanksi Pajak, X1*M
b. Dependent Variable: Total Kepatuhan Wajib Pajak

Based on the results presented in the table above, the coefficient of determination (R^2) is found to be 0.640. This value falls within the range of $0 \leq R^2 \leq 1$, indicating a moderate explanatory power of the regression model. In other words, the independent variables tax knowledge, accounting knowledge, and tax sanctions, both directly and as moderating variables collectively account for 64.0% of the variance in taxpayer compliance. Therefore, it can be concluded that 64.0% of the variation in taxpayer compliance is explained by the variables included in the model, while the remaining 36.0% is attributed to other factors not examined in this study.

Discussion

The Influence of Tax Knowledge on Taxpayer Compliance Tax knowledge refers to an individual's understanding of legal provisions and tax procedures, including rights and obligations as a taxpayer, as well as administrative and reporting mechanisms in accordance with current tax regulations (Dewi et al., 2021). Theoretically, such knowledge is expected to form the rational basis for compliance behavior, as explained by attribution theory, which posits that individual behavior including tax compliance is influenced by internal attributions such as cognition and attitudes toward regulations (Heider, 1958); (E. Caroline et al., 2023). However, this study finds that tax knowledge does not have a significant influence on taxpayer compliance, suggesting that increased awareness does not necessarily translate into compliant behavior. This finding contradicts the basic assumptions of attribution theory and much of the previous literature, which has asserted that a better understanding of the tax system promotes compliance (Pravasanti, 2020); (N. K. Raharjo et al., 2020).

On the other hand, several studies have found the opposite: that tax knowledge has a significant positive effect on compliance, particularly among MSME taxpayers who often face limited access to formal education and fiscal information (Dewi et al., 2021); (K. D. Caroline et al., 2023). These inconsistencies may be explained by other factors, such as the generally low level of awareness among taxpayers regarding key regulations, including tax rates and non-taxable income thresholds (Fauziati et al., 2023).

Field observations also support this finding. Many MSME actors in the research area have registered for Tax Identification Numbers (NPWP), but such registration is often motivated by administrative needs such as applying for loans or participating in public procurement rather than a genuine intention to comply with tax obligations (Yuliani et al., 2020). This indicates that compliance is often formalistic and not accompanied by a substantive understanding of legal tax obligations (Kirchler et al., 2008).

This situation implies that current tax education efforts have not been entirely effective in building fiscal awareness and responsibility, particularly within the MSME sector. Increasing compliance requires more than just disseminating information or general outreach it also calls for a contextualized, interactive, and practice-oriented educational approach (OECD, 2023); (Nugraha & Putri, 2023). Therefore, more inclusive and applicable tax education strategies must be developed to enhance substantive knowledge and promote voluntary compliance among small business actors. In conclusion, while tax knowledge is conceptually important, its effectiveness in fostering taxpayer compliance depends on the extent to which such knowledge is truly internalized, understood, and used as the basis for tax-related behavioral decisions.

The Influence of Accounting Knowledge on Taxpayer Compliance Accounting knowledge plays a crucial role in enabling taxpayers particularly among MSMEs to fulfill their tax obligations in a structured and lawful manner (Trida & Jenni, 2020). A solid understanding of basic accounting principles allows taxpayers to accurately record transactions, maintain orderly bookkeeping, and prepare financial reports that reflect the real financial position of their business. This competency facilitates the correct calculation of taxable income and, in turn, ensures the timely and appropriate payment and reporting of tax liabilities (D. Iskandar, 2022).

Taxpayers who possess accounting knowledge tend to show a higher intention to comply voluntarily, as they are more aware of the procedural and legal requirements involved in taxation (Amelia, 2018); (Dewi et al., 2021). The ability to identify deductible expenses, apply correct tax rates, and complete tax forms accurately reduces the risk of unintentional non-compliance and potential tax sanctions (Fauziati et al., 2023). Moreover, accounting knowledge empowers MSME taxpayers to distinguish between personal and business finances, which is essential for generating credible financial documentation in support of tax filings (E. Caroline et al., 2023).

Several empirical studies have confirmed the positive and significant relationship between accounting knowledge and taxpayer compliance, especially among self-employed individuals and MSME operators (Amelia, 2018); (F. Z. S. Iskandar, 2022); (Trida & Jenni, 2020). Even when implemented in a simple form, the practice of accounting encourages transparency, discipline, and responsibility in financial management all of which are foundational to sustainable tax compliance (Yuliani et al., 2020). In conclusion, accounting knowledge not only improves taxpayers' technical ability to comply with tax regulations but also fosters a more responsible fiscal attitude. Therefore, efforts to enhance compliance among MSMEs should include targeted education and training programs focused on practical accounting skills.

The Influence of Tax Knowledge and Accounting Knowledge on Taxpayer Compliance Taxpayer compliance remains a persistent and critical challenge in tax administration, as non-compliance directly contributes to tax evasion and the erosion of state revenue (Maisaroh, 2017); (Torgler, 2011). Understanding the determinants of taxpayer compliance is essential for governments seeking to improve voluntary tax adherence, particularly among MSMEs, which represent a substantial segment of the informal and semi-formal economy (OECD, 2019). Among the primary factors influencing taxpayer behavior are tax knowledge, accounting knowledge, and the perceived enforcement of tax sanctions (K. D. Caroline et al., 2023); (Dewi et al., 2021). Tax knowledge refers to an individual's ability to comprehend and apply legal standards, procedures, and rights related to taxation, including filing, payment, and dispute resolution processes (Djatmiko, 2016); (Palil & Mustapha, 2011). The presence of tax knowledge is assumed to improve taxpayer awareness and reduce unintentional errors, thereby fostering greater compliance (S. Raharjo et al., 2020); (Fauziati et al., 2023).

Accounting knowledge, on the other hand, equips taxpayers with the technical competence to record, classify, and summarize financial transactions, enabling them to calculate and report taxes more accurately (Trida & Jenni, 2020); (F. Z. S. Iskandar, 2022). A taxpayer who understands basic accounting principles is more likely to prepare financial reports that align with tax regulations, thereby reducing the likelihood of audit findings and penalties (Amelia, 2018). Empirical evidence suggests that both tax knowledge and accounting knowledge significantly and simultaneously affect taxpayer compliance (Leviana et al., 2022). In this study, it was found that tax knowledge, accounting knowledge, and tax sanctions collectively explain 64% of the variance in taxpayer compliance. This indicates a substantial, yet not exhaustive, explanatory power, implying that other behavioral, psychological, or contextual variables may also be at play (Yuliani et al., 2020). The relatively high impact of these knowledge-based factors underscores the need for targeted interventions to enhance taxpayer literacy. Consistent with prior recommendations, the government should strengthen tax education and outreach programs especially among MSMEs to promote better understanding of tax obligations and financial accountability (OECD, 2019); (Dewi et al., 2021). Strengthening educational strategies is not only essential to increase compliance but also to build trust in the tax system and reduce the gap between potential and actual revenue collection.

Tax Sanctions Moderate the Effect of Tax Knowledge on Taxpayer Compliance. Taxpayer compliance refers to the extent to which taxpayers fulfill their fiscal obligations, including registration, accurate calculation, timely payment, and the submission of tax returns and related documents, in accordance with applicable laws (Nurmantu, 2019); (Torgler, 2011). High compliance levels are critical for increasing state revenue, enhancing fiscal sustainability, and reducing tax gaps, particularly in developing economies with low voluntary compliance rates (OECD, 2019); (Palil & Mustapha, 2011). One of the key strategies employed by governments to increase compliance is the enforcement of tax sanctions, which serve both punitive and deterrent functions (Mardiasmo, 2018); (I. G. N. Agun et al., 2022). These sanctions are intended to discourage non-compliance by increasing the perceived costs of evasion or negligence (Allingham & Sandmo, 1972). However, the effectiveness of sanctions is often contingent upon their credibility, fairness, and consistency of enforcement (Kirchler et al., 2008); (Torgler & Schaltegger, 2005). The moderating role of tax sanctions in the relationship between tax knowledge and taxpayer compliance has produced mixed empirical findings. Some studies, such as (Wijaya, 2022) and (Saputri, 2022), found that tax sanctions do not significantly moderate this relationship, suggesting that knowledge alone may drive compliance regardless of external enforcement. Conversely, other research (Riantini & Sanulika, 2023) reported that tax sanctions strengthen the influence of tax understanding, indicating a synergistic effect between cognitive and deterrent factors.

In the context of MSMEs in Jambi City, findings from this study demonstrate that tax sanctions do not significantly moderate the relationship between tax knowledge and taxpayer compliance. This may be attributed to the notion that taxpayers with high levels of tax understanding are already aware of the potential legal consequences, thus reducing the marginal motivational effect of sanctions (Fauziati et al., 2023); (E. Caroline et al., 2023). These taxpayers are likely driven by intrinsic motivations and informed decision-making rather than fear of punishment. This suggests that while sanctions are essential to ensure compliance among uninformed or reluctant taxpayers, they may have limited impact on those who are already knowledgeable and engaged (OECD, 2019). Therefore, it becomes imperative for the government to invest in sustained tax education campaigns and socialization programs that not only disseminate knowledge but also clarify the nature and purpose of sanctions (Palil & Mustapha, 2011); (Dewi et al., 2021). Moreover, periodic evaluation of tax policies and enforcement mechanisms is essential to ensure their effectiveness across various taxpayer segments, especially among MSMEs which often operate with limited regulatory oversight (Yuliani et al., 2020).

Tax Sanctions Moderate the effect of Accounting Knowledge on Taxpayer Compliance. A strong understanding of accounting principles plays a critical role in enabling taxpayers to meet their fiscal obligations, particularly in maintaining accurate bookkeeping and preparing timely financial statements (Trida & Jenni, 2020); (D. Iskandar, 2022). Through proper accounting practices, taxpayers especially owners of MSMEs are better equipped to calculate taxable income, manage cash flows, and report taxes in accordance with applicable laws (Amelia, 2018). However, accounting knowledge alone may not be sufficient to ensure full compliance unless it is supported by effective enforcement mechanisms, such as tax sanctions (OECD, 2019); (Dewi et al., 2021). Tax sanctions function as both preventive and corrective measures that deter violations of tax laws and reinforce taxpayer obligations (Mardiasmo, 2018); (Suhendri, 2015). According to deterrence theory, the perceived severity and certainty of penalties significantly influence taxpayer behavior by increasing the psychological and financial costs of non-compliance (Allingham & Sandmo, 1972); (Kirchler et al., 2008). When accounting knowledge is coupled with the credible threat of sanctions, the relationship between financial literacy and compliance becomes stronger, as taxpayers recognize the risks of misreporting or delaying payments (Torgler, 2011); (Fauziati et al., 2023).

Empirical evidence supports this interaction. (Hernando et al., 2022) found that tax sanctions significantly moderate the effect of accounting knowledge on taxpayer compliance, particularly among MSME actors who are increasingly aware of the legal and economic consequences of tax evasion. In the context of Jambi City, this finding suggests that tax sanctions can amplify the positive impact of accounting education on compliance behavior, especially within the culinary industry an economic sector with a large number of cash-based transactions and informal financial systems (Yuliani et al., 2020). Thus, taxation authorities are encouraged to adopt a dual strategy: enhancing taxpayers' financial literacy while simultaneously reinforcing the visibility and consistency of tax enforcement (OECD, 2019); (Palil & Mustapha, 2011). Proactive measures, such as regular audits, penalty enforcement, and targeted tax training for MSMEs, could foster a more compliant tax culture and support sustainable regional development. This approach not only increases revenue collection but also promotes fair competition and economic equity in local business ecosystems (E. Caroline et al., 2023).

Conclussion

Based on the empirical findings of this study, it can be inferred that tax knowledge does not exert a statistically significant influence on taxpayer compliance among MSMEs in Jambi City, thereby leading to the acceptance of the null hypothesis (H_0) for this variable. This result suggests that despite possessing a basic understanding of tax regulations, MSME taxpayers may not necessarily translate this knowledge into compliant behavior potentially due to limited motivation, lack of enforcement, or administrative barriers. In contrast, both accounting knowledge and the perception of tax sanctions demonstrate a significant and positive effect on taxpayer compliance, as indicated by the rejection of their respective null hypotheses (H_0). These findings highlight the practical importance of financial literacy and enforcement mechanisms in fostering voluntary compliance among small business actors.

Moreover, when examined simultaneously, tax knowledge, accounting knowledge, and tax sanctions collectively exhibit a significant effect on MSME taxpayer compliance. This indicates a multidimensional relationship in which cognitive, procedural, and regulatory factors jointly shape compliance behavior. However, the moderation analysis reveals that tax sanctions do not significantly moderate the relationship between tax knowledge and taxpayer compliance. This suggests that sanctions may have limited additional influence on taxpayers who already possess tax knowledge, possibly because these individuals are already aware of the implications of non-compliance. In contrast, tax sanctions are found to significantly moderate the relationship between accounting knowledge and compliance, implying that when taxpayers understand accounting principles and are concurrently aware of the consequences of non-compliance, their likelihood of fulfilling tax obligations increases. This underscores the need for integrated fiscal strategies that combine educational efforts with consistent enforcement to enhance compliance behavior, particularly within the MSME sector in Jambi City.

This study has limitations, namely that it used questionnaires without being complemented by interviews or open-ended questions, which may have led to respondents providing dishonest answers, resulting in data that may not fully reflect the research objectives. The study only included the variables of tax understanding, accounting understanding, and tax sanctions, whereas 36.0% of taxpayer compliance could be influenced by other variables not examined in this research. For future research, it is recommended to include additional variables such as perceptions of the effectiveness of the tax system, tax awareness, and others. This study can serve as a foundation or reference for subsequent researchers conducting similar investigations.

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