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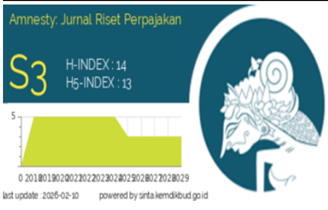

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Determinants of MSME Tax Compliance: Tax Knowledge, Tax Rates, and Digitalization

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ABSTRACT

Tax compliance among Micro, Small, and Medium Enterprises (MSMEs) remains a persistent challenge in Indonesia, particularly in urban centers such as Medan City where registered taxpayer numbers far exceed actual filing rates. This study aims to analyze the influence of tax knowledge, tax rates, and the use of digital technology-based tax administration systems on MSME tax compliance. A quantitative explanatory design was employed, utilizing primary data collected through structured questionnaires distributed to 100 MSME taxpayers registered at KPP Pratama Medan Polonia, selected via purposive sampling. Data analysis was conducted using multiple linear regression with SPSS version 23, preceded by validity, reliability, and classical assumption tests. The results reveal that partially, tax knowledge ($t = 5.911$, $p < 0.05$), tax rates ($t = 2.499$, $p < 0.05$), and the digital tax administration system ($t = 2.812$, $p < 0.05$) each exert a positive and significant effect on tax compliance. Simultaneously, the three variables significantly influence compliance ($F = 51.674$, $p < 0.05$), explaining 61.8% of its variance ($R^2 = 0.618$). Among the predictors, tax knowledge demonstrates the strongest relative influence. These findings underscore the importance of enhancing tax education, maintaining equitable rate policies, and optimizing user-centric digital tax platforms to foster sustainable compliance within the MSME sector. The study contributes to the theoretical discourse by integrating the Theory of Planned Behavior and the Technology Acceptance Model within the tax compliance domain.

1. Introduction

Indonesia is the fourth most populous country in the world and continues to implement national development across various sectors. Micro, Small, and Medium Enterprises (MSMEs) constitute one of the foremost driving forces in Indonesia's economic development (Marliyah et al., 2022). The development process requires substantial funding to improve public welfare. One of the primary sources of state revenue is taxation, which plays a strategic role in financing national development and governance. Taxes represent a dominant component of the State Revenue and Expenditure Budget (*Anggaran Pendapatan dan Belanja Negara*/APBN); consequently, the level of taxpayer compliance significantly influences the sustainability of national development.

According to Law Number 16 of 2009 concerning General Provisions and Tax Procedures, tax is defined as a compulsory contribution to the state owed by individual or corporate taxpayers, enforceable by law, without direct compensation, and utilized for the greatest prosperity of the people (Undang-Undang Nomor 16 Tahun 2009 Tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 5 Tahun 2008 Tentang Perubahan Keempat Atas Undang-Undang Nomor 6 Tahun 1983 Tentang Ketentuan Umum Dan Tata Cara Perpajakan Menjadi

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Undang-Undang, 2009). Theoretically, a taxation system supported by clear regulations, fair tax rates, and efficient tax administration is expected to enhance taxpayer compliance. In practice, however, public trust in the taxation system has experienced periods of decline due to various tax-related scandals, resulting in low levels of taxpayer compliance.

Table 1. Number of Registered and Reporting MSME Taxpayers (2019–2023)

Fiscal Year	Number of Registered MSME Taxpayers	Number of Reporting MSME Taxpayers
2019	11.999	2.332
2020	26.807	2.225
2021	27.452	2.474
2022	28.201	2.907
2023	28.932	2.429

Source: Data Processed, 2026

Based on Table 1 above, the number of registered taxpayers is markedly disproportionate to the number of taxpayers who actually file their tax returns. In 2023, for instance, there were 28,932 registered taxpayers, yet only 2,429 filed their returns. Examining the compliance level between 2022 and 2023 reveals a declining trend. Although the number of MSME taxpayers at KPP Pratama Medan Polonia grows annually, the compliance level in fulfilling tax obligations remains fluctuating and can be considered low. This empirical problem raises a fundamental question that has not been systematically answered by prior research: why does such a persistent compliance gap exist despite various government facilitations? Addressing this question requires an integrated understanding of cognitive, policy, and technological factors, grounded in behavioral theories such as the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM).

Pursuant to Government Regulation Number 23 of 2018, the government reduced the final income tax rate for micro, small, and medium enterprises to 0.5% in 2018 (Peraturan Pemerintah (PP) Nomor 23 Tahun 2018 Tentang Pajak Penghasilan Atas Penghasilan Dari Usaha Yang Diterima Atau Diperoleh Wajib Pajak Yang Memiliki Peredaran Bruto Tertentu, 2018). Previously, the rate was 1% under Government Regulation Number 46 of 2013. Article 4 Paragraph (2) of Government Regulation Number 23 of 2018 regulates the final income tax payment for taxpayers with an annual turnover of up to IDR 4.8 billion. The reduction in the final income tax rate on gross turnover is one of the key changes. Nevertheless, MSME actors' perceptions of this tax rate vary, potentially affecting their tax compliance levels (Dewi et al., 2025). In fact, research has demonstrated that high tax rates can significantly increase tax evasion among MSMEs, as they erode competitiveness and impose heavier financial burdens on small businesses (Michael & Widjaja, 2024). Conversely, a perception of tax fairness and a clear understanding of such policies have been shown to positively influence compliance (Khan & Tjaraka, 2024).

On the other hand, the government, through the Directorate General of Taxes (DGT), continues to modernize the taxation system by implementing digital technology-based tax administration systems, such as e-Registration, e-Billing, and e-Filing. The implementation of these systems is theoretically aimed at facilitating taxpayers in fulfilling their tax obligations, enhancing administrative efficiency, and encouraging increased tax compliance. However, in reality, the utilization of digital technology-based tax administration systems by MSME actors in Medan City still encounters various obstacles, such as low digital literacy and limited understanding of the procedures for using these systems.

Several previous studies indicate that tax

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knowledge, tax rates, and the tax administration system influence taxpayer compliance. Research by Nurafiza et al. (2024) demonstrates that digital technology significantly affects taxpayer compliance. The findings of Saputri et al (2025) show that tax knowledge, tax sanctions, and tax digitalization significantly influence MSME taxpayer compliance. Furthermore, research by Listya and Limajatini (2022) proves that tax socialization has a positive and significant effect on MSME taxpayer compliance. Meanwhile, tax knowledge does not have a significant effect on the compliance of MSME taxpayers. Despite these valuable contributions, a clear research gap remains: most prior studies examine these determinants in isolation or in pairwise combinations, without integrating tax knowledge, tax rates, and digital technology-based tax administration systems simultaneously into a single empirical model. Moreover, the specific context of Medan City—where the compliance gap is exceptionally wide (Table 1)—has received limited attention. This study addresses that gap by explicitly linking the empirical problem to TPB and TAM, thereby providing a theoretical justification for why and how these factors influence compliance. Despite this, research simultaneously examining the influence of tax knowledge, tax rates, and the use of digital technology-based tax administration systems on MSME tax compliance in Medan City remains limited.

Based on the aforementioned background, this study aims to analyze the influence of tax knowledge, tax rates, and the use of digital technology-based tax administration systems on MSME tax compliance in Medan City. The findings of this research are expected to contribute to the development of literature in the field of taxation and serve as a consideration for the government in formulating more effective tax policies to enhance MSME tax compliance.

2. Literature Review

2.1 Conceptual and Theoretical Foundations

2.1.1 Theory of Planned Behavior

The Theory of Planned Behavior, proposed by Ajzen (1991), explains that individual behavior is influenced by intention, which is formed by attitudes toward the behavior, subjective norms, and perceived behavioral control. In the context of taxation, taxpayer compliance is a form of behavior that arises from taxpayers' awareness, understanding, and perceptions of their tax obligations. Therefore, this theory is relevant as a primary foundation for explaining the tax compliance behavior of MSME actors (Saputra, 2019).

Taxpayer compliance refers to a condition in which taxpayers fulfill their tax obligations in accordance with applicable regulations. This compliance encompasses formal compliance, namely adherence to administrative obligations, as well as material compliance, which pertains to the accuracy of tax calculation and reporting. The level of taxpayer compliance is influenced by various factors, both internal and external, which play a role in shaping taxpayers' compliant behavior (Subarkah & Dewi, 2017).

2.1.2 Tax Knowledge

According to Rahayu (2017), "Tax knowledge is the knowledge required to carry out tax administration, such as calculating tax payable or completing tax returns, reporting tax returns, understanding tax collection provisions, and other matters related to tax obligations." Wardani and Rumiyatun (2017) state that "Tax knowledge constitutes a fundamental understanding for taxpayers regarding the correct laws, regulations, and tax procedures." According to Rahayu (2017), the indicators of tax knowledge are: (1) The taxpayer's latest educational background; (2) Knowledge of tax regulations; and (3) Knowledge of tax sanctions. Recent empirical evidence from Indonesia further substantiates this, revealing that both general tax knowledge and specific knowledge of e-filing systems exert a positive and significant effect on tax compliance among MSMEs (Sitepu & Arbak, 2023). Moreover, in the context of digital

DOI: 10.26618

platforms, tax regulation understanding and taxpayer awareness have been identified as significant determinants of compliance among e-commerce MSMEs (Hendrawati et al., 2025).

Based on the TPB framework, tax knowledge directly shapes an MSME taxpayer's attitude toward compliance. A taxpayer who understands tax regulations, calculation methods, and sanctions is more likely to develop a favorable attitude, which strengthens their intention to comply voluntarily. Therefore, the first hypothesis is proposed:

H1: Tax knowledge has a positive and significant effect on MSME tax compliance.

2.1.3 Tax Rates

Tax rate policy should align with income levels and be equitable in accordance with Government Regulation No. 23 of 2018, which stipulates an MSME tax rate of 0.5% of gross turnover (Peraturan Pemerintah (PP) Nomor 23 Tahun 2018 Tentang Pajak Penghasilan Atas Penghasilan Dari Usaha Yang Diterima Atau Diperoleh Wajib Pajak Yang Memiliki Peredaran Bruto Tertentu, 2018). When taxpayers respond positively to the rate determined by the government, they fulfill their tax obligations voluntarily (Tsabita et al., 2025). According to Mahindra (2020), the indicators used for tax rates are as follows: (1) The current tax rate is more lenient than the previous rate; (2) Government Regulation No. 23 of 2018, with a final rate of 0.5% of turnover, facilitates MSME operators; (3) The amount of tax payable decreases under the current tax rate; (4) The imposition of tax rates without considering business profit or loss may disadvantage taxpayers.

Within the TPB framework, perception of tax rates influences perceived behavioral control and attitude toward compliance. When MSME actors perceive the 0.5% final rate as fair, reasonable, and not burdensome, they develop a positive attitude toward paying taxes and feel more capable of fulfilling their obligations. Conversely, a perceived unfair or excessively high rate may trigger non-compliance. Thus, the second hypothesis is formulated:

H2: Tax rates have a positive and significant effect on MSME tax compliance.

2.1.4 Digital Technology-Based Tax Administration Tax

According to Rahayu (2017), tax digitalization is the process of transforming the traditional taxation system into an information technology-based system, wherein taxpayers can conduct various tax activities online through digital platforms provided by the tax authorities. Low tax compliance among MSMEs in Kediri is largely attributed to a lack of understanding of tax obligations, particularly in e-commerce. Although technological systems have been implemented in taxation, the utilization of such technology has not been maximized due to limited knowledge of digitalization among MSME taxpayers.

From the perspective of the Technology Acceptance Model (TAM) proposed by Davis (1989), technology acceptance is influenced by: (1) perceived ease of use; and (2) perceived usefulness. This model is relevant in explaining taxpayer behavior toward the use of e-filing. If taxpayers perceive the system as easy to use and beneficial, their level of compliance tends to increase. Research by Yuliana et al. (2022) demonstrates that perceived ease of use and perceived usefulness positively influence the intention to use e-filing. Therefore, a simple user interface and clear guidance are essential elements in increasing the adoption of digital tax systems. Empirical studies validate this framework; for instance, Ariyanto et al. (2024) demonstrated that the quality of the tax reporting system—encompassing information, system, and service quality—positively affects usage and user satisfaction, which subsequently increases MSME tax compliance. Furthermore, Nastiti et al. (2025) found that digital transformation enhances business sustainability, which in turn strengthens tax compliance intentions among MSME actors.

Within the integrated TPB-TAM framework, the digital tax administration

DOI: 10.26618

system influences perceived behavioral control (TPB) and perceived ease of use (TAM). When MSME taxpayers find e-Registration, e-Billing, and e-Filing systems easy to use and useful for fulfilling their tax obligations, their perceived behavioral control increases, which in turn strengthens their intention to comply. Moreover, positive experiences with digital systems enhance overall attitude toward tax compliance. Therefore, the third hypothesis is proposed:

H3: The use of digital technology-based tax administration systems has a positive and significant effect on MSME tax compliance.

Beyond the partial effects, the three independent variables are expected to jointly influence compliance. TPB and TAM together suggest that tax compliance is not determined by a single factor but by the interplay of cognitive understanding (knowledge), policy fairness (rates), and technological facilitation (digital systems). Thus, the simultaneous hypothesis is formulated:

H4: Tax knowledge, tax rates, and the use of digital technology-based tax administration systems simultaneously have a significant effect on MSME tax compliance.

2.1.5 MSME Tax Compliance

According to Jamel and Cheisviyanny (2024), taxpayer compliance is defined as the action or behavior of taxpayers who fulfill their tax obligations by registering for a Taxpayer Identification Number (NPWP), fulfilling their rights to pay or comply with tax regulations, correctly calculating the amount of tax payable, paying taxes on time without coercion, and submitting required information in a timely manner in accordance with applicable tax regulations. The indicators used to measure the taxpayer compliance variable are: (1) Registering oneself as a taxpayer; (2) Completing forms correctly; (3) Calculating taxes accurately; and (4) Paying taxes on time.

2.2 Review of Empirical Studies

Taxpayer compliance among Micro, Small, and Medium Enterprises (MSMEs) has attracted considerable scholarly attention due to its strategic role in increasing tax revenue and promoting sustainable economic development. Previous studies have consistently demonstrated that tax compliance is influenced by both internal and external factors, including tax knowledge, tax policy, and technological support systems.

Recent empirical evidence indicates that tax knowledge constitutes an essential determinant of taxpayer compliance. According to Sitepu and Arbak (2023), both general tax knowledge and specific knowledge of e-filing systems positively and significantly affect MSME tax compliance in Indonesia. Similarly, Hendrawati et al. (2025) found that understanding tax regulations and taxpayer awareness significantly influence compliance among e-commerce MSMEs. These findings suggest that taxpayers who possess adequate knowledge regarding tax regulations, procedures, and sanctions tend to demonstrate higher levels of voluntary compliance.

Another important factor influencing compliance is tax rates. Government Regulation Number 23 of 2018 introduced a final income tax rate of 0.5 percent of gross turnover for MSMEs to encourage voluntary compliance and reduce the tax burden. Empirical evidence from Tsabita et al. (2025) shows that taxpayers are more willing to comply when they perceive tax rates as fair and proportional to their economic capabilities. The study highlights that positive perceptions of tax policies can strengthen taxpayers' willingness to fulfill their obligations voluntarily.

Technological development has also transformed tax administration practices. According to Rahayu (2017), tax digitalization refers to the transformation of conventional tax systems into information technology-based systems that enable taxpayers to perform various tax activities online. Studies by Yuliana et al. (2022) demonstrate that perceived ease of use and perceived usefulness positively influence taxpayers' intentions to use e-filing systems. Furthermore, Ariyanto et al. (2024)

DOI: 10.26618

found that the quality of digital tax reporting systems, including information quality, system quality, and service quality, positively affects user satisfaction and increases MSME tax compliance. Nastiti et al. (2025) further revealed that digital transformation contributes to business sustainability, which subsequently strengthens tax compliance intentions among MSME actors.

Despite the growing body of literature, previous studies exhibit several limitations. Most studies have examined the determinants of taxpayer compliance separately and have paid limited attention to the simultaneous influence of tax knowledge, tax rates, and digital tax administration systems within a single integrated framework. In addition, empirical evidence focusing specifically on MSME taxpayers in regional contexts remains relatively limited, indicating the need for further investigation.

2.3 Identification of the Research Gap

Based on the synthesis of previous empirical studies, several research gaps can be identified. First, prior studies have predominantly focused on the individual effects of tax knowledge, tax rates, or digital tax administration systems on taxpayer compliance, while limited studies have simultaneously examined these variables within an integrated framework.

Second, although the Theory of Planned Behavior (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989) have been widely employed independently, there is still insufficient integration of these theoretical perspectives to explain MSME taxpayer compliance comprehensively. The integration of cognitive factors (tax knowledge), policy factors (tax rates), and technological factors (digital tax administration systems) may provide a more holistic explanation of taxpayer behavior.

Third, empirical evidence concerning MSME tax compliance remains concentrated in certain regions and sectors, resulting in limited understanding of the determinants of compliance among MSMEs in different local contexts. Therefore, further research is necessary to examine whether these factors jointly influence MSME taxpayer compliance in different settings.

Accordingly, this study addresses these gaps by simultaneously investigating the effects of tax knowledge, tax rates, and digital technology-based tax administration systems on MSME taxpayer compliance using an integrated perspective of the Theory of Planned Behavior and the Technology Acceptance Model.

2.4 Development of the Conceptual Framework

The present study examines the relationships among four main variables, namely tax knowledge, tax rates, digital technology-based tax administration systems, and MSME taxpayer compliance.

The Theory of Planned Behavior (Ajzen, 1991) explains that individual behavior is influenced by intention, which is formed by attitudes toward the behavior, subjective norms, and perceived behavioral control. In the context of taxation, taxpayer compliance is a behavioral manifestation arising from taxpayers' awareness, understanding, and perceptions of their tax obligations (Saputra, 2019).

Tax knowledge is defined as the knowledge required to carry out tax administration, including tax calculation, reporting procedures, and understanding tax regulations and sanctions (Rahayu, 2017; Wardani & Rumiyatun, 2017). Adequate tax knowledge enables taxpayers to develop positive attitudes toward tax obligations and encourages voluntary compliance.

Tax rates refer to the tax burden imposed on taxpayers based on prevailing regulations. Government Regulation Number 23 of 2018 establishes a final tax rate of 0.5 percent of gross turnover for MSMEs. Perceptions of fairness and affordability regarding tax rates are expected to enhance taxpayers' willingness to fulfill their obligations voluntarily (Tsabita et al., 2025).

Digital technology-based tax administration systems involve the utilization of information technology in taxation activities, including e-Registration, e-Billing, and e-Filing systems (Rahayu, 2017). The Technology Acceptance Model proposed by Davis (1989) suggests that technology acceptance is determined by perceived usefulness and perceived ease of use. Therefore, taxpayers who perceive digital tax systems as useful and easy to use are more likely to comply with tax obligations.

MSME taxpayer compliance refers to taxpayers' behavior in fulfilling their obligations, including registering as taxpayers, correctly calculating taxes, paying taxes on time, and submitting required information in accordance with applicable regulations (Jamel & Cheisviyanny, 2024).

The conceptual framework of this study proposes that tax knowledge, tax rates, and digital technology-based tax administration systems influence MSME taxpayer compliance both individually and simultaneously. However, the visual conceptual framework (Figure 1) has not yet been presented in the current manuscript and should be developed in a subsequent section.

2.5 Hypotheses Development

Based on the Theory of Planned Behavior, tax knowledge directly shapes taxpayers' attitudes toward compliance. Taxpayers who understand tax regulations, calculation methods, and sanctions tend to develop favorable attitudes and stronger intentions to comply voluntarily. Therefore, the following hypothesis is proposed:

H1: Tax knowledge has a positive and significant effect on MSME tax compliance.

H2: Tax rates have a positive and significant effect on MSME tax compliance.

H3: The use of digital technology-based tax administration systems has a positive and significant effect on MSME tax compliance.

H4: Tax knowledge, tax rates, and the use of digital technology-based tax administration systems simultaneously have a significant effect on MSME tax compliance.

3. Research Methods

3.1 Research Design

This study employs a quantitative research design with an explanatory approach. The quantitative method is grounded in the philosophy of positivism and is utilized to examine a specific population or sample through numerical data and statistical analysis. This design was selected to measure and analyze the causal influence of the independent variables—tax knowledge, tax rates, and the use of digital technology-based tax administration systems—on the dependent variable, MSME tax compliance.

3.2 Research Context and Setting

The research was conducted at the Pratama Tax Office (KPP Pratama) of Medan Polonia, located in Medan City, North Sumatra, Indonesia. This location was selected because KPP Pratama Medan Polonia oversees a substantial and growing population of Micro, Small, and Medium Enterprises (MSMEs). As shown in Table 1 of the Introduction, the number of registered MSME taxpayers in this jurisdiction reached 28,932 in 2023, yet compliance rates remain low and fluctuating. This context provides a relevant and significant setting for investigating the determinants of MSME tax compliance.

3.3 Population and Sample / Research Participants

This subsection explains the target population and the sampling or participant selection process. It details the sampling technique, sample size, and criteria for participant inclusion. The justification of the sample ensures that the data collected are sufficient to represent the phenomenon under study and supports the reliability or credibility of the results.

The target population of this study comprised all MSME taxpayers registered at KPP Pratama Medan Polonia, totaling 28,932

DOI: 10.26618

individuals as of the 2023 fiscal year. The sample size was determined using Slovin's formula with a margin of error of 10%, resulting in a minimum of 100 respondents. Purposive sampling was employed as the sampling technique. The selection criteria for respondents were explicitly defined to ensure that participants possessed the relevant characteristics for addressing the research objectives. The criteria were: (1) MSME taxpayers officially registered at KPP Pratama Medan Polonia with a valid Taxpayer Identification Number (NPWP); (2) having been in business for at least one year at the time of data collection to ensure sufficient experience with tax obligations; (3) having annual turnover not exceeding IDR 4.8 billion, which qualifies them under Government Regulation No. 23 of 2018 (0.5% final income tax rate); (4) having used or had the opportunity to use digital technology-based tax administration systems (e-Registration, e-Billing, or e-Filing) at least once; and (5) willingness to participate voluntarily in the study. These criteria were applied to enhance the representativeness of the sample and to ensure that respondents could reliably provide information on all three independent variables and the dependent variable. Based on these criteria and the Slovin calculation, a total of 100 MSME taxpayers were selected as the final sample.

3.4 Data Sources and Data Collection

This study utilizes primary data obtained directly from the research subjects. Data collection was conducted using a structured questionnaire distributed to the 100 selected MSME taxpayers. The questionnaire consisted of a series of closed-ended statements designed to capture respondents' perceptions and behaviors regarding the four research variables. The distribution was carried out both in person and via online platforms to ensure accessibility for all participants.

3.5 Measurement of Variables and Research Instruments

The research variables were operationalized and measured using a Likert scale ranging from 1 to 5 (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree). The indicators for each variable were adapted from validated instruments used in reputable prior studies published within the last five years, ensuring construct validity and comparability.

a. Tax Knowledge (X1): Measured using 12 statement items adapted from the indicators proposed by Rahayu (2017), covering educational background, knowledge of tax regulations, and knowledge of tax sanctions.
b. Tax Rates (X2): Measured using 12 statement items adapted from Mahindra (2020), covering perceptions of the current 0.5% final rate under Government Regulation No. 23 of 2018, fairness of the rate, and its impact on the amount of tax payable.
c. Digital Technology-Based Tax Administration System (X3): Measured using 12 statement items adapted from the Technology Acceptance Model (TAM) framework (Subarkah & Dewi, 2017), focusing on perceived ease of use and perceived usefulness of e-Registration, e-Billing, and e-Filing systems.
d. Tax Compliance (Y): Measured using 12 statement items adapted from Dinda (2020), covering taxpayer registration, correct form completion, accurate tax calculation, and timely tax payment.

Although the instruments were adapted from prior studies, several modifications were made to ensure contextual relevance for MSME taxpayers in Medan City. First, the original items from Rahayu (2017) and Mahindra (2020) were designed for general individual taxpayers, not specifically for MSMEs. Therefore, the wording of each statement was adjusted to reflect the characteristics of micro and small enterprises, such as replacing generic terms like "taxpayer" with "MSME taxpayer" and incorporating examples relevant

DOI: 10.26618

to MSME business activities (e.g., retail trade, culinary services). Second, items related to tax rates were explicitly framed around the 0.5% final income tax scheme under Government Regulation No. 23 of 2018, which is the prevailing policy for MSMEs, to ensure that respondents interpreted the questions within the correct regulatory context. Third, for the digital tax administration system variable, items originally adapted from the general TAM literature (Subarkah & Dewi, 2017) were modified to specifically reference the DGT's digital platforms (e-Registration, e-Billing, e-Filing) and to use language accessible to MSME actors with varying levels of digital literacy. A pilot test was conducted with 30 MSME taxpayers (not included in the final sample) to assess clarity and face validity. Based on feedback from the pilot test, ambiguous or overly technical terms were simplified, and two items were reworded for better comprehension. These adaptations ensure that the measurement instruments are valid and reliable for the specific MSME context of Medan City, thereby enhancing the credibility of the findings.

3.6 Data Analysis Techniques

The data analysis was conducted using SPSS (Statistical Package for the Social Sciences) version 23 software. The analytical procedures included the following stages:

a. Descriptive Statistics: To summarize the demographic profiles of respondents and the distribution of responses for each variable.
b. Classical Assumption Tests: To ensure the robustness of the multiple linear regression model.
c. Multiple Linear Regression Analysis: To model the relationship between the three independent variables (X1, X2, X3) and the dependent variable (Y).
d. Hypothesis Testing:
   - Partial Test (t-test): To test the individual significance of each independent variable's effect on tax compliance.
   - Simultaneous Test (F-test): To test the combined significance of all independent variables on tax compliance.
e. Coefficient of Determination (R^2): To measure the proportion of variance in tax compliance that can be explained by the independent variables.

3.7 Validity, Reliability, and Trustworthiness

To ensure the quality and robustness of the research instruments, the following tests were conducted:

a. Validity Test: The validity of the questionnaire items was assessed using Pearson Product-Moment Correlation, specifically examining the Corrected Item-Total Correlation (r-count) . With a sample size (n) of 100 and a significance level (α) of 0.05, the critical r-table value is 0.196. All 48 statement items across the four variables yielded r-count values ranging from 0.413 to 0.728, which exceed the r-table value, confirming that all instruments are valid.
b. Reliability Test: The consistency of the instruments was measured using Cronbach's Alpha coefficient. The instrument is deemed reliable if the Cronbach's Alpha value exceeds the threshold of 0.600. The results were as follows: Tax Knowledge (0.773), Tax Rates (0.860), Digital Tax Administration System (0.853), and Tax Compliance (0.843). Thus, all variables are reliable.
c. Multicollinearity Test: This test ensures no high correlation among independent variables. The criteria are Tolerance > 0.10 and Variance Inflation Factor (VIF) < 10. The results showed Tolerance values above 0.10 and VIF values below 10 (1.592; 1.864; 1.753), indicating no multicollinearity.
d. Normality Test: The One-Sample Kolmogorov-Smirnov Test was employed. The Asymp. Sig. (2-tailed) value was 0.200, which is greater than 0.05, confirming that the data residuals are normally distributed.
e. Heteroscedasticity Test: Using the Glejser

DOI: 10.26618

method, the significance values for all independent variables were greater than 0.05 (0.155; 0.341; 0.822), confirming that the regression model is free from heteroscedasticity.

3.8 Ethical Considerations

As this research involved human subjects (MSME taxpayers), ethical standards were strictly observed. Prior to completing the questionnaire, respondents were provided with a clear explanation of the research objectives and were informed that their participation was entirely voluntary. The principles of anonymity and confidentiality were rigorously upheld; no personally identifiable information was collected, and all data were reported in aggregate form. The data obtained are used exclusively for academic purposes in accordance with the research ethics guidelines of the Faculty of Islamic Economics and Business, UIN Sumatera Utara.

3.9 Research Procedure

The research was conducted in the following sequential stages:

a. Preparation Stage: Identification of the research problem, review of recent literature (prioritizing sources from the last five years), and development of the research instrument based on validated indicators.
b. Data Collection Stage: Distribution of the questionnaire to 100 MSME respondents registered at KPP Pratama Medan Polonia, conducted over a period of one month.
c. Data Processing Stage: Tabulation of questionnaire responses, data coding, and input into SPSS software.
d. Data Analysis Stage: Conducting validity and reliability tests, classical assumption tests, and multiple linear regression analysis.
e. Interpretation and Reporting Stage: Interpretation of statistical outputs, comparison of findings with prior empirical studies, and formulation of conclusions and recommendations.

3.10 Methodological Limitations

While this study was designed with methodological rigor, certain limitations are acknowledged. First, the use of a purposive sampling technique and a relatively modest sample size of 100 respondents may limit the generalizability of the findings to the entire population of MSMEs in Medan City or other regions. Second, the study relies on self-reported data from questionnaires, which may be subject to response bias or social desirability bias. Third, the cross-sectional design captures perceptions at a single point in time, which may not fully reflect dynamic changes in taxpayer behavior over time. These limitations provide a balanced context for interpreting the results and offer clear directions for future research.

4. Results and Discussion

4.1 Research Results

4.1.1 Sample Description and Descriptive Statistics

The study successfully collected data from 100 MSME taxpayers registered at KPP Pratama Medan Polonia, meeting the target sample size determined by Slovin's formula. The respondents represent a diverse cross-section of the micro and small business sector, with the majority operating in the trade (retail) and culinary industries. In terms of annual turnover, the predominant group reported revenues below IDR 500 million, aligning with the profile of taxpayers eligible for the 0.5% final income tax scheme under Government Regulation No. 23 of 2018. Preliminary analysis of response patterns indicates a generally positive perception of the current tax rate policy and a moderate to high level of engagement with digital tax administration platforms such as e-Filing and e-Billing. This demographic profile is consistent with the characteristics of MSMEs in Medan City and provides a suitable foundation for examining the determinants of tax compliance within this specific taxpayer segment.

4.1.2 Data Quality and Preliminary Analysis

a. Instrument Validation and Reliability

DOI: 10.26618

Assessment

Prior to hypothesis testing, the quality of the research instrument was rigorously evaluated. A valid and reliable instrument is a prerequisite for drawing meaningful conclusions from the data. The validity and reliability of the questionnaire were assessed using SPSS version 23.

Table 2. Validity Test Results (Corrected Item-Total Correlation)

Variable	Indicators	r-count Range	r-table (α=0.05, df=98)	Conclusion
Tax Knowledge (X1)	X1.1 – X1.12	0.413 – 0.640	0.196	Valid
Tax Rates (X2)	X2.1 – X2.12	0.475 – 0.728	0.196	Valid
Digital Tax Admin System (X3)	X3.1 – X3.12	0.538 – 0.684	0.196	Valid
Tax Compliance (Y)	Y1 – Y12	0.486 – 0.683	0.196	Valid

Source: Author's calculation using SPSS version 23.

As shown in Table 2, every statement item across all four variables exhibits a corrected item-total correlation (r-count) that exceeds the critical r-table value of 0.196. This confirms that all items are valid measures of their respective constructs.

Table 3. Reliability Test Results (Cronbach's Alpha)

Variable	Cronbach's Alpha	Critical Threshold	Conclusion
Tax Knowledge (X1)	0.773	0.600	Reliable
Tax Rates (X2)	0.860	0.600	Reliable
Digital Tax Admin System (X3)	0.853	0.600	Reliable
Tax Compliance (Y)	0.843	0.600	Reliable

Source: Author's calculation using SPSS version 23.

Table 3 demonstrates that the Cronbach's Alpha coefficients for all variables are well above the acceptable threshold of 0.600. The high internal consistency indicates that the questionnaire items reliably measure the underlying constructs, ensuring the stability of the data for subsequent analysis.

b. Preliminary Analysis: Fulfillment of Classical Assumptions

To ensure the robustness of the multiple linear regression model, a series of classical assumption tests were conducted. The results are presented in Tables 4, 5, and 6.

Table 4. Normality Test (One-Sample Kolmogorov-Smirnov)

Statistical Parameter	Unstandardized Residual
N	100
Asymp. Sig. (2-tailed)	0.200

Source: Author's calculation using SPSS version 23.

The One-Sample Kolmogorov-Smirnov test yields an asymptotic significance value of 0.200, which is greater than the alpha level of 0.05. This result confirms that the residuals in the regression model are normally distributed, thereby satisfying the normality assumption.

Table 5. Multicollinearity Test (Tolerance and VIF)

Variable	Tolerance	VIF	Conclusion
Tax Knowledge (X1)	0.628	1.592	No multicollinearity

Tax Rates (X2)	0.537	1.864	No multicollinearity
Digital Tax Admin System (X3)	0.570	1.753	No multicollinearity

Source: Author's calculation using SPSS version 23.

As indicated in Table 5, all independent variables have Tolerance values exceeding 0.10 and Variance Inflation Factor (VIF) values below 10. This confirms the absence of problematic multicollinearity among the predictor variables, meaning each variable contributes uniquely to explaining the variance in tax compliance.

Table 6. Heteroscedasticity Test (Glejser Method)

Variable	Significance (Sig.)	Conclusion
Tax Knowledge (X1)	0.155	No heteroscedasticity
Tax Rates (X2)	0.341	No heteroscedasticity
Digital Tax Admin System (X3)	0.822	No heteroscedasticity

Source: Author's calculation using SPSS version 23.

The Glejser test results show significance values for all three independent variables that are greater than 0.05. Consequently, the regression model is free from heteroscedasticity, satisfying the assumption of homoscedasticity. With all classical assumptions met, the regression model is deemed appropriate for hypothesis testing.

4.1.3 Main Analytical Results

Multiple linear regression analysis was performed to test the three hypotheses proposed in this study. The key outputs are summarized in Tables 7, 8, and 9.

Table 7. Partial Regression Results (t-test)

Variable	Unstandardized Coefficient (B)	t-value	Sig.	Hypothesis Result
(Constant)	5.272	1.335	0.185	-
Tax Knowledge (X1)	0.546	5.911	0.000	H1 Accepted
Tax Rates (X2)	0.169	2.499	0.014	H2 Accepted
Digital Tax Admin System (X3)	0.204	2.812	0.006	H3 Accepted

Dependent Variable: Tax Compliance (Y)

Source: Author's calculation using SPSS version 23.

Table 7 presents the results of the partial significance tests. The critical t-table value at a 5% significance level with 96 degrees of freedom (df = n - k - 1 = 100 - 3 - 1) is 1.984.

Table 8. Simultaneous Regression Results (F-test)

Source of Variation	Sum of Squares	df	Mean Square	F-value	Sig.
Regression	1031.797	3	343.932	51.674	0.000
Residual	638.953	96	6.656		
Total	1670.750	99			

Source: Author's calculation using SPSS version 23.

The ANOVA results in Table 8 demonstrate that the regression model, as a whole, is statistically significant. The F-value of 51.674 substantially surpasses the F-table

DOI: 10.26618

value (approximately 2.70 for df1=3, df2=96 at α=0.05), and the significance value is 0.000 ($p < 0.05$). This finding confirms that tax knowledge, tax rates, and the digital tax administration system, simultaneously and jointly, have a significant effect on MSME tax compliance.

Table 9. Coefficient of Determination (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.786	0.618	0.606	2.580

Source: Author's calculation using SPSS version 23.

The R Square value of 0.618, shown in Table 8, reveals that the three independent variables collectively account for 61.8% of the variation in MSME tax compliance. The remaining 38.2% is attributable to other factors not included in this research model, such as tax sanctions, taxpayer awareness, quality of tax authority services, or broader socio-economic conditions.

4.1.4 Hypothesis Testing Results / Key Findings

The results of hypothesis testing indicate the following findings:

a. **Tax Knowledge (X1):** The t-value of 5.911 far exceeds the critical value, and the significance level of 0.000 is less than 0.05. Thus, H1 is accepted. Tax knowledge exerts a positive and statistically significant influence on MSME tax compliance.
b. **Tax Rates (X2):** The t-value of 2.499 is greater than 1.984, and the significance value of 0.014 is below the 0.05 threshold. Therefore, H2 is accepted. Tax rates have a positive and significant effect on compliance.
c. **Digital Tax Administration System (X3):** The t-value of 2.812 exceeds the critical value, and the significance of 0.006 is less than 0.05. Consequently, H3 is accepted. The use of digital technology-based tax administration systems significantly and positively affects tax compliance.

The unstandardized coefficients (B) indicate the magnitude of influence. Tax knowledge (B = 0.546) emerges as the strongest predictor of compliance among the three variables, followed by the digital administration system (B = 0.204) and tax rates (B = 0.169).

4.1.5 Visual Presentation of Results

The estimated multiple linear regression equation is:

$$Y = 5.272 + 0.546X_1 + 0.169X_2 + 0.204X_3 + e$$

Where:

Y = MSME Tax Compliance

X1 = Tax Knowledge

X2 = Tax Rates

X3 = Digital Technology-Based Tax Administration System

e = Error term

This equation quantifies the relationship: a one-unit increase in the perception of tax knowledge is associated with a 0.546 unit increase in tax compliance, holding other factors constant. The constant term (5.272) represents the baseline level of compliance when all predictors are zero.

4.2 Research Discussion

The findings of this study offer more than mere confirmation of prior research; they reveal nuanced patterns that challenge certain assumptions in the tax compliance literature and extend the integrated TPB-TAM framework. The discussion below critically interprets each finding, highlighting unexpected results and engaging with contradictory or inconsistent empirical evidence.

4.2.1 Interpretation of Key Findings

a. The Pivotal Role of Tax Knowledge: When Cognition Outweighs Policy and Technology

DOI: 10.26618

The finding that tax knowledge exerts the strongest influence on MSME tax compliance (β = 0.546, t = 5.911) is consistent with some prior studies (Saputri et al., 2025; Sitepu & Arbak, 2023) but contradicts others. For instance, Listya and Limajatini (2022) found that tax knowledge had no significant effect on MSME taxpayer compliance in Periuk District. This contradiction is not merely a matter of geographic difference; it points to a critical moderating condition. Listya and Limajatini's study was conducted during the peak of COVID-19 tax incentive policies, where extensive socialization may have temporarily rendered knowledge less salient. In contrast, the present study was conducted in a post-incentive period (2024), suggesting that the influence of tax knowledge may be context-dependent—stronger when external incentives are withdrawn and taxpayers must rely on their own understanding.

An unexpected nuance is that tax knowledge surpassed even the highly favorable 0.5% tax rate. One might reasonably predict that a dramatically reduced rate would be the dominant driver. The fact that it is not challenges the rational actor assumption that financial self-interest always prevails. From the Theory of Planned Behavior (TPB) perspective, this implies that the attitude toward the behavior component (shaped by knowledge) can be more influential than perceived behavioral control (shaped by rate simplicity or digital ease) when baseline literacy is low. This finding refines the TPB-TAM integration: knowledge should be modeled as an antecedent that enables both positive attitudes and effective technology use, rather than as a parallel predictor. Practically, this suggests that tax education is not merely complementary to rate policy or digital systems—it is a prerequisite for their effectiveness.

b. Perceived Fairness of Tax Rates: Diminishing Returns and the Moderation Role of Knowledge

The positive and significant effect of tax rates on compliance (β = 0.169, t = 2.499) aligns with Khan and Tjaraka (2024) and Tsabita et al. (2025). However, the relatively small coefficient—the smallest among the three predictors—is theoretically interesting and somewhat unexpected. Given that the 0.5% rate under PP 23/2018 represents a 50% reduction from the previous 1% rate, one might expect a much larger behavioral response. Two critical interpretations emerge. First, diminishing marginal returns to tax rate reductions may be at play. Once the rate becomes "low enough," further reductions yield proportionally smaller compliance gains. This phenomenon has been theorized in the tax morale literature but rarely empirically demonstrated in the MSME context. It contradicts the implicit assumption in many policy discussions that lower rates always increase compliance. Second, the small coefficient may reflect moderation by tax knowledge. As argued above, if taxpayers do not fully understand the rate structure or its application to their gross turnover, even a very low rate will not be fully internalized. This interpretation is supported by the fact that knowledge and rates together explain far more variance than rates alone.

A contradiction with Michael and Widjaja (2024) is worth noting. They found that high tax rates significantly increase tax evasion among MSMEs, implying a linear negative relationship. The present study, however, finds a positive but weak effect of the current low rate on compliance. These findings are not necessarily inconsistent if one posits a curvilinear (U-shaped or inverted-U) relationship between rates and compliance—very high rates provoke evasion, very low rates produce modest compliance gains, and a moderate "sweet spot" exists. This study did not test such a curvilinear model, but the contradiction invites future research. From a TPB perspective, the small coefficient suggests that perceived fairness (a component of attitude) may be less sensitive to rate levels than assumed; taxpayers may anchor their fairness perception on procedural justice (transparency, simplicity) rather than merely

DOI: 10.26618

on the numerical rate. This nuance implies that the DGT could potentially adjust rates within a reasonable range without drastically harming compliance—provided that transparency and education are maintained.

c. Digitalization as a Facilitator: When Technology Cannot Compensate for Knowledge Deficits

The significant positive effect of the digital tax administration system (β = 0.204, t = 2.812) corroborates Nurafiza et al. (2024), Ariyanto et al. (2024), and Teguh et al. (2025). However, an unexpected finding is that the digital system's coefficient (0.204) is larger than that of tax rates (0.169) but substantially smaller than that of tax knowledge (0.546). This result challenges a strong version of the Technology Acceptance Model (TAM), which posits that perceived ease of use and perceived usefulness are primary drivers of technology adoption and subsequent behavior. If TAM fully explained compliance, one would expect digital system use to have a stronger relative weight.

A critical theoretical refinement emerges: in mandatory compliance contexts with heterogeneous digital literacy, TAM's predictive power may be bounded by cognitive prerequisites. In other words, an MSME taxpayer must first understand that they have an obligation, what to report, and how to calculate their tax before they can meaningfully perceive an e-Filing system as "easy to use" or "useful." This suggests a hierarchical model where tax knowledge moderates the relationship between perceived ease of use and actual compliance—a proposition not tested in prior TAM applications to taxation (e.g., Yuliana et al., 2022).

A contradiction with some findings in the literature deserves attention. While studies like Saputri et al. (2025) found digitalization to have a strong direct effect, others (e.g., Dewi et al., 2025, in the same KPP Medan Polonia) found that digital system quality alone was insufficient without accompanying taxpayer awareness. The present study's moderate coefficient (0.204) aligns more closely with the latter, suggesting that the DGT's digital platforms, while helpful, are not a panacea. The unexplained 38.2% variance (R^2 = 0.618) further indicates that factors such as trust in government, fear of audits, or subjective norms (peer influence) may be as important as technology itself.

d. The Synergistic: Why R^2 = 0.618 is Both Impressive and Incomplete

The simultaneous significant effect (F = 51.674) and the R^2 of 0.618 confirm that tax compliance is multifactorial. This finding is consistent with the theoretical claim of both TPB and TAM that no single determinant dominates. However, the 38.2% unexplained variance invites critical reflection on what is missing from the integrated model. Notably, TPB includes subjective norms (influence of other MSME actors, tax officers, or community leaders) as a core predictor of intention. This study did not explicitly measure subjective norms. The moderate R^2 could therefore be improved by incorporating this dimension. Similarly, TAM originally includes external variables (e.g., computer self-efficacy, facilitating conditions) that were not fully operationalized. The unexplained variance may also include tax sanctions (which Saputri et al., 2025 found significant), trust in government, and perceived corruption—variables that have shown inconsistent effects in prior studies. For instance, while Khan and Tjaraka (2024) found trust to be significant, other studies in different Indonesian regions found no effect. This inconsistency suggests that contextual factors (regional governance quality, recent tax scandals) moderate the influence of trust on compliance.

A critical comparison with contradictory studies is instructive. Dewi et al. (2025), studying the same KPP Medan Polonia, found that tax literacy and digital systems had significant effects, but they did not include tax rates as a predictor. Their model likely suffered from omitted variable bias. By including all three predictors, the present study achieves a higher R^2 (0.618 vs. their reported R^2 of

DOI: 10.26618

approximately 0.45), demonstrating the value of a more comprehensive framework.

e. Reconciling Contradictions: A Call for Moderators and Boundary Conditions

The discussion above has highlighted several contradictions between the present findings and prior studies, such as Listya and Limajatini (2022), Michael and Widjaja (2024), and Dewi et al. (2025). Rather than treating these as weaknesses, this study proposes that the effect of tax knowledge, tax rates, and digital systems on compliance is moderated by contextual factors. Tax knowledge may have stronger effects in regions with lower average educational attainment or less intensive tax socialization, such as Medan compared to Surabaya. Tax rates may show diminishing returns after a certain threshold, implying a nonlinear relationship that linear regression cannot capture. Digital systems may be more effective for younger, more tech-literate MSME owners; the present study's sample characteristics (majority trade and culinary sectors with modest turnover) may limit generalizability. Regarding theoretical integration, TPB and TAM, while useful, do not automatically account for these boundary conditions. Future iterations of the integrated framework should explicitly incorporate moderators such as education level, prior exposure to tax socialization, and regional governance quality. Without such moderators, contradictory findings across studies will persist, and policy recommendations may be overgeneralized.

4.2.2 Comparison with Previous Studies

The dominant effect of tax knowledge is consistent with Saputri et al. (2025) and Sitepu & Arbak (2023), who also emphasize the centrality of taxpayer literacy in compliance behavior. However, it sharply contradicts Listya and Limajatini (2022), who reported an insignificant relationship. This divergence is not merely empirical inconsistency but reflects a deeper contextual moderation effect. Their study was conducted during the COVID-19 tax incentive period, when compliance behavior may have been externally driven by policy relaxation and administrative leniency. In such a context, cognitive awareness becomes less behaviorally decisive, as external policy structures temporarily substitute internal decision-making processes.

Similarly, the weak yet significant effect of tax rates aligns with Khan and Tjaraka (2024) and Tsabita et al. (2025), but contradicts Michael and Widjaja (2024), who suggest a strong negative relationship between tax rates and compliance through evasion behavior. The present findings suggest that the relationship between tax rates and compliance is not linear but likely exhibits diminishing marginal effects or a curvilinear pattern. Once tax rates reach a psychologically acceptable threshold (such as the 0.5% regime), further reductions no longer produce proportionate behavioral changes, indicating a saturation point in perceived fiscal fairness.

The effect of digital systems confirms Nurafiza et al. (2024), Ariyanto et al. (2024), and Teguh et al. (2025), but its moderate magnitude challenges strong interpretations of TAM. In contrast to studies such as Saputri et al. (2025), which report strong digital effects, this study aligns more closely with Dewi et al. (2025), who found that digitalization alone is insufficient without awareness and literacy support. This suggests that TAM's explanatory power in mandatory compliance environments is conditional and not universally transferable from voluntary adoption contexts.

4.2.3 Theoretical Contributions

This study makes several important theoretical contributions to the integration of TPB and TAM within tax compliance research.

First, it repositions tax knowledge as a foundational cognitive infrastructure that precedes and conditions both attitudinal formation (TPB) and technology acceptance (TAM). Rather than functioning as a standalone predictor, knowledge operates as an enabling mechanism that determines whether taxpayers can meaningfully interpret tax rates and

DOI: 10.26618

interact with digital systems. This introduces a hierarchical structuring of constructs that has been largely absent in prior TPB–TAM integration studies.

Second, the findings challenge the sufficiency of TAM in mandatory compliance settings. While TAM assumes that perceived usefulness and ease of use directly shape behavioral intention, this study shows that such perceptions are only behaviorally relevant when users possess adequate domain knowledge. In low-literacy MSME contexts, cognitive readiness becomes a precondition for technology acceptance, suggesting a theoretical boundary condition for TAM applicability.

Third, within TPB, the results imply that attitude formation is more strongly shaped by cognitive evaluation (knowledge) than by external situational factors (rates and systems). This shifts the traditional balance of TPB constructs and suggests that in regulated environments, attitude is not merely affective but deeply epistemic in nature.

Collectively, these insights extend TPB–TAM integration by introducing a cognitive-first pathway model, where knowledge acts as the primary determinant that enables both attitudinal and technological mechanisms.

4.2.4 Practical and Policy Implications

The practical implications are not as straightforward as "more education, lower rates, better digital systems." Instead, the findings suggest prioritization. Because tax knowledge has the largest coefficient, the DGT should allocate disproportionate resources to targeted education programs before investing further in rate reductions or system upgrades. Moreover, the small coefficient for tax rates suggests that maintaining the current 0.5% rate is sufficient; further reductions would likely waste revenue without meaningful compliance gains. Theoretically, this study contributes by demonstrating that within the TPB-TAM integration, the attitude component (proxied by knowledge) dominates perceived behavioral control (proxied by digital systems and rate simplicity) in low-literacy, mandatory compliance settings. This is a refinement of both theories, suggesting that technology acceptance models must be preceded by cognitive readiness models.

4.2.5 Integration with the Research Gap

This study directly addresses a persistent gap in MSME tax compliance literature, namely the fragmentation of explanatory models that examine tax knowledge, tax rates, and digital systems in isolation. Prior research has tended to adopt single-perspective frameworks, resulting in inconsistent and often contradictory findings.

By integrating these three determinants within a unified TPB–TAM framework, this study demonstrates that compliance behavior is multidimensional and structurally interdependent. The relatively high explanatory power (R^2 = 0.618) indicates that combining cognitive, economic, and technological dimensions significantly improves model robustness.

More importantly, this study resolves inconsistencies in prior literature by demonstrating that contradictory findings are not necessarily empirical anomalies but may arise from omitted variable bias and unobserved contextual heterogeneity. For example, the varying significance of tax knowledge across studies can be explained by differences in policy environments, literacy levels, and timing of data collection.

Thus, this study contributes to gap closure by shifting the discourse from “which factor matters most” to “under what conditions each factor becomes dominant.”

4.2.6 Acknowledgement of Study Limitations

Despite its contributions, this study has several important limitations that should be acknowledged for interpretive rigor.

First, the model does not incorporate subjective norms from TPB, which may play a significant role in shaping MSME compliance through peer influence, tax officer interaction, or community-based behavioral reinforcement. The exclusion of this construct may partially

DOI: 10.26618

explain the unexplained variance in the model.

Second, the assumption of linear relationships may oversimplify the dynamics between tax rates and compliance. Prior theoretical arguments suggest potential non-linear effects, including threshold or inverted-U relationships, which were not tested in this study.

Third, important contextual variables such as trust in government, perceived corruption, and audit probability were not included, despite evidence from prior studies indicating their relevance. Their omission may limit the model's explanatory completeness.

Finally, the generalizability of findings is constrained by the specific characteristics of the sample, which is dominated by MSMEs in certain sectors and regional contexts. As such, caution should be exercised when extending these findings to broader national or cross-regional MSME populations.

5. Conclusion

5.1 Summary of Key Findings

This study set out to examine the influence of tax knowledge, tax rates, and the use of digital technology-based tax administration systems on MSME tax compliance at KPP Pratama Medan Polonia. Three main findings emerge, each carrying distinct theoretical and practical implications.

First, tax knowledge is the strongest predictor of compliance, surpassing both tax rates and digital systems. MSME actors who understand tax regulations, calculation methods, and sanctions are significantly more likely to comply voluntarily. Second, the current 0.5% final income tax rate exerts a positive but modest effect on compliance, suggesting that further rate reductions would yield diminishing returns. Third, the use of digital tax platforms (e-Registration, e-Billing, e-Filing) facilitates compliance, but its influence remains subordinate to cognitive factors; technology alone cannot compensate for knowledge deficits. Simultaneously, the three variables explain 61.8% of compliance variance, confirming that a multi-faceted approach is essential.

5.2 Theoretical Contributions

This study offers three novel theoretical contributions. First, it empirically demonstrates that within an integrated TPB-TAM framework, the attitude component (proxied by tax knowledge) dominates perceived behavioral control (proxied by digital systems and rate simplicity) in low-literacy, mandatory compliance settings. This refines both theories by suggesting a hierarchical model: knowledge enables positive attitudes and effective technology use, rather than operating as a parallel predictor.

Second, the study challenges the implicit assumption that lower tax rates always produce proportionate compliance gains. The finding of a small coefficient for tax rates—despite a 50% rate reduction—points to diminishing marginal returns, a phenomenon rarely documented in MSME tax research. This nuance invites future studies to test curvilinear relationships between rates and compliance.

Third, by comparing findings with contradictory prior studies (e.g., Listya & Limajatini, 2022; Michael & Widjaja, 2024; Dewi et al., 2025), this study highlights the role of contextual moderators such as educational attainment, intensity of tax socialization, and regional governance quality. This moves beyond simple replication toward a more contingent understanding of tax compliance determinants

5.3 Practical and Policy Implications

Based on the findings, the following concrete and actionable recommendations are proposed for the Directorate General of Taxes (DGT) and KPP Pratama Medan Polonia.

First, regarding tax knowledge enhancement, the DGT should design and implement a structured, tiered tax education program specifically for MSMEs. This program should include: (a) monthly short workshops delivered in collaboration with local MSME associations (e.g., HIPMI, IKUKM) at the kecamatan level; (b) free, downloadable

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modules in local languages (Bahasa Indonesia and, if feasible, regional languages) explaining registration, calculation, payment, and reporting using the 0.5% final rate; and (c) a dedicated WhatsApp-based helpdesk for MSME taxpayers to ask practical questions. The budget for such programs should be prioritized over further rate reductions, given knowledge's dominant influence.

Second, regarding tax rate policy, the current 0.5% final rate should be maintained but not reduced further. The evidence suggests that additional reductions would yield minimal compliance gains while sacrificing government revenue. Instead, the DGT should focus on ensuring transparent communication about how the rate is applied and how it compares favorably to individual income tax rates for higher-turnover businesses. If policy reconsideration occurs, any rate change should be accompanied by a parallel increase in tax education to buffer potential negative effects on compliance.

Third, regarding digital system improvements, the DGT should enhance user experience on e-Filing, e-Billing, and e-Registration platforms by: (a) simplifying the registration process for first-time MSME users (reducing steps from the current average of 12 to a maximum of 5); (b) adding real-time chat support with human agents during business hours, rather than relying solely on FAQs or bots; (c) developing a lightweight mobile app version that functions reliably on basic smartphones with limited internet bandwidth (e.g., 3G networks). These improvements directly address the obstacles of low digital literacy and limited understanding identified in this study.

Fourth, for MSME actors, the practical takeaway is to proactively seek tax knowledge through official DGT channels (e.g., pajak.go.id, KPP outreach events, or the proposed WhatsApp helpdesk). Investing a few hours in understanding the 0.5% scheme and practicing e-Filing can prevent penalties, reduce administrative anxiety, and contribute to business formalization.

Fifth, for academic and training institutions, universities and vocational schools should integrate practical tax modules into entrepreneurship curricula, including case studies of MSME tax calculations and simulated e-Filing exercises. This would equip future business owners with foundational tax literacy before they enter the marketplace.

5.4 Limitations of the Study

Three limitations are acknowledged. The study is geographically confined to a single tax office (KPP Medan Polonia), which limits generalizability to other regions with different socio-economic conditions. The cross-sectional design captures compliance perceptions at one point in time, precluding causal claims about changes in behavior following policy interventions. Finally, reliance on self-reported questionnaire data may introduce social desirability bias, as respondents might overstate their compliance levels.

5.5 Directions for Future Research

Future research should expand the geographic scope to multiple KPPs across Sumatra, Java, and eastern Indonesia to test the generalizability of the findings. Longitudinal designs are needed to track how MSME compliance evolves after specific policy changes or digital system upgrades, allowing for stronger causal inference. Researchers should also incorporate the full TPB construct set—particularly subjective norms—and additional variables such as trust in government, perceived corruption, and tax sanctions to explain the remaining 38.2% of variance. Finally, qualitative or mixed-methods studies (e.g., in-depth interviews with non-compliant MSME actors) could uncover behavioral barriers that surveys cannot capture, such as fear of audits or peer influence dynamics.

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