

Financial Literacy and Perceived Tax Digitalization as Joint Predictors of MSME Tax Compliance: Evidence from Central Java, Indonesia

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Abstract

Micro, small, and medium enterprises (MSMEs) play an important role in emerging economies, yet limited administrative capacity may create challenges for tax compliance. This study examined the associations of Financial Literacy and Perceived Tax Digitalization with MSME Tax Compliance among MSME owners and managers in Central Java, Indonesia, while controlling for Business Age. A quantitative cross-sectional survey was conducted using online and paper-based questionnaires distributed through MSME associations, local business communities, and government-supported MSME networks. Of 300 questionnaires distributed, 250 complete and eligible responses were retained. Financial Literacy, Perceived Tax Digitalization, and MSME Tax Compliance were measured using seven, six, and seven items, respectively, on five-point Likert scales. Multiple linear regression was employed, with HC3 heteroskedasticity-consistent robust standard errors examined as a sensitivity analysis. Financial Literacy was positively associated with MSME Tax Compliance ($\beta = .118$, $p = .007$), while Perceived Tax Digitalization showed a stronger positive association ($\beta = .760$, $p < .001$). Business Age was not statistically significant ($p = .815$). The overall model was statistically significant, $F(3, 246) = 188.744$, $p < .001$, with $R^2 = .697$ and adjusted $R^2 = .693$. The findings indicate that Financial Literacy and user experiences with digital tax services are relevant dimensions of MSME Tax Compliance. The results support combining practical financial and tax capability-building with user-centred digital tax services that emphasise usability, efficiency, reliability, convenience, and security. Given the cross-sectional and purposive sampling design, the findings indicate associations rather than causal effects or population-wide estimates.

Keywords:

Business Age; Central Java; Financial Literacy; MSME Tax Compliance; Perceived Tax Digitalization.

1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play an important role in employment, local economic activity, and entrepreneurship in emerging economies. At the same time, many MSMEs have limited administrative capacity because financial management, daily operations, and regulatory responsibilities are often handled directly by owners or managers. This situation has direct relevance for tax compliance. Fulfilling tax obligations requires business owners to keep financial records, identify tax liabilities, prepare funds for payment, and complete reporting accurately and on time. Tax compliance is therefore more than a matter of fulfilling a legal obligation; it also reflects behavioral conditions related to taxpayer capability, administrative burden, and interactions with tax authorities (Alm, 2019; Andreoni et al., 1998; Slemrod, 2019).

Tax Digitalization has increasingly reshaped how taxpayers interact with tax authorities and fulfil their administrative obligations. In this study, Tax Digitalization refers to the broader policy and administrative

transformation of tax processes through digital technologies, including registration, information access, invoicing, payment, reporting, and communication. Digitalisation is intended to simplify administrative procedures and reduce paperwork, travel, processing time, and procedural uncertainty. Evidence from Peru, for example, shows that VAT e-invoicing was associated with increases in reported sales, purchases, and VAT liabilities, with particularly pronounced effects among smaller firms and sectors with historically lower compliance levels (Bellon et al., 2022). Recent research also indicates that digital tax instruments, such as e-invoicing and prefilled returns, can support tax administration and compliance when accompanied by adequate institutional capacity, clear implementation, and appropriate taxpayer assistance (Hesami et al., 2024; OECD, 2020).

The presence of digital tax infrastructure, however, does not necessarily mean that taxpayers experience these services as useful, accessible, or easy to operate. Users may still face difficulties in learning a system, navigating its functions, understanding procedures, resolving errors, or assessing the security of their information. Research on digital public services increasingly emphasises that technological deployment alone does not guarantee favourable user outcomes. Usability, reliability, service quality, trust, and user support can shape how people evaluate and engage with digital government services (Mergel et al., 2019; Suradi et al., 2026; Thi Chung & Ngoc Bich Tram, 2026). These issues may be particularly relevant for MSMEs, where accounting, taxation, and information-technology tasks are often managed without dedicated specialist staff.

This distinction motivates the separation between Tax Digitalization and Perceived Tax Digitalization in the present study. Tax Digitalization denotes the policy-level and administrative transformation of tax processes through digital technology, whereas Perceived Tax Digitalization (PTD) denotes the respondent-level evaluation examined empirically in this study. PTD captures MSME owners' experiences with digital tax services in terms of service use, ease of learning and operation, time efficiency, system reliability, convenience in tax payment and reporting, and perceived security. The distinction matters because the existence or expansion of digital infrastructure does not by itself indicate how effectively users can engage with the services provided. A user-centred perspective therefore shifts attention from the availability of digital tax technology to how taxpayers experience and evaluate that technology in their routine tax-related activities (Suradi et al., 2026).

Financial Literacy offers a complementary perspective on MSME tax-compliance behavior because financial obligations are embedded in the routine management of the business. In this study, Financial Literacy refers to the practical capability to understand and use financial information in business decision-making. For MSME owners, this capability includes maintaining financial records, separating business and personal finances, monitoring cash flow, preparing financial plans, and handling financial aspects of tax obligations. Tax-related knowledge is therefore treated as one practical component of the broader capability rather than as a substitute for Financial Literacy. This conceptualisation is consistent with foundational definitions that view financial literacy in terms of both financial knowledge and the ability to apply that knowledge in financial decisions (Huston, 2010; Lusardi & Mitchell, 2014). Evidence from recent SME literature further links Financial Literacy with managerial practices, financial behavior, technology adoption, and business outcomes (Graña-Alvarez et al., 2024; Molina-García et al., 2023; Rekha et al., 2025).

Financial Literacy and Perceived Tax Digitalization can be viewed as complementary dimensions of the conditions surrounding MSME tax compliance. Financial Literacy represents an internal capability that may help business owners organise financial information and perform tax-related tasks, whereas PTD reflects the digital-service environment as experienced by users. Owners with stronger financial capabilities and more favourable evaluations of digital tax services may be better positioned to carry out reporting and payment activities. This reasoning is consistent with the Theory of Planned Behavior (TPB), particularly the concept of perceived behavioral control, which concerns individuals' perceived ability to perform a behavior under relevant constraints (Ajzen, 1991). The Slippery Slope Framework (SSF) provides a complementary perspective by emphasising the roles of trust, power, and the taxpayer–authority relationship in tax compliance (Gangl et al., 2015; Kirchler et al., 2008; Wahl et al., 2010). In the present study, TPB and SSF are used as theoretical lenses to motivate the proposed relationships rather than as complete frameworks whose full sets of constructs are empirically tested.

Indonesia provides a relevant setting for examining these issues because Tax Digitalization has expanded through electronic filing, digital payment mechanisms, and the development of more integrated tax-administration systems. The Core Tax Administration System forms part of this broader effort to improve data integration, service delivery, and administrative processes. At the same time, digital reform involves more than technical implementation because taxpayer readiness, service experience, and institutional trust may shape how digital services are received and used. Recent research on Indonesia's Core Tax Administration System highlights the relevance of both institutional power and taxpayer trust in understanding tax-compliance behavior (Darmayasa & Hardika, 2024). Indonesian evidence suggests that electronic tax filing is associated with formal tax compliance among MSMEs, indicating the relevance of digital channels in the tax-administration process (Erdiansyah & Khoirunurrofik, 2021).

Despite growing research on e-filing, digital tax systems, tax knowledge, and Financial Literacy, several gaps remain. First, many studies treat Tax Digitalization as a technical or institutional intervention and pay insufficient attention to how MSME users experience the service itself. Second, Financial Literacy and the user

experience of digital tax services are often examined separately, even though they represent complementary mechanisms: an internal capability and an external service condition. Third, evidence from regional Indonesian MSME settings remains limited, particularly in Central Java, where businesses may differ in sector, business age, financial-management routines, and familiarity with digital public services. A user-centred understanding of tax compliance is therefore needed to explain whether MSME owners' financial capability and their experience of digital tax services are jointly associated with compliance behavior.

Against this background, the present study examines the associations of Financial Literacy and Perceived Tax Digitalization with MSME Tax Compliance among MSME owners and managers in Central Java, Indonesia, while controlling for Business Age. The study focuses on two complementary dimensions of tax-compliance conditions: the financial capability of the business owner and the owner's evaluation of the digital tax-service environment. The analysis is guided by the following research questions:

RQ1: Is Financial Literacy positively associated with MSME Tax Compliance?

RQ2: Is Perceived Tax Digitalization positively associated with MSME Tax Compliance?

RQ3: Are Financial Literacy and Perceived Tax Digitalization jointly associated with MSME Tax Compliance after controlling for Business Age?

Based on these questions, the study proposes the following hypotheses:

H1: Financial Literacy is positively associated with MSME Tax Compliance.

H2: Perceived Tax Digitalization is positively associated with MSME Tax Compliance.

H3: Financial Literacy and Perceived Tax Digitalization are jointly associated with MSME Tax Compliance after controlling for Business Age.

In this study, "jointly associated" refers to the simultaneous inclusion of Financial Literacy and Perceived Tax Digitalization as predictors in the multiple regression model and their combined statistical contribution within that model. It does not imply an interaction or moderation effect between the two predictors.

This study makes three contributions. First, it refines the study of Tax Digitalization by distinguishing system-level digital transformation from Perceived Tax Digitalization, a user-level assessment of digital tax-service experience. This distinction brings the taxpayer's experience into the analysis rather than treating the availability of digital infrastructure as sufficient evidence of effective digitalisation. Second, the study brings Financial Literacy and Perceived Tax Digitalization into the same empirical model, linking an internal financial capability with an external digital-service experience in relation to MSME Tax Compliance. The two constructs are treated as complementary explanatory dimensions rather than as components of a single construct. Third, the study provides evidence from 250 MSME owners and managers in Central Java, Indonesia, an empirical setting that offers a subnational perspective on tax compliance in an emerging economy. These contributions have practical relevance for tax authorities and MSME-support institutions seeking to combine user-centred digital-service development with practical financial and tax capability-building.

The remainder of this article is organised as follows. Section 2 presents the research design, sampling procedure, measurement of the study variables, and analytical strategy. Section 3 reports the empirical findings and discusses their theoretical and practical implications. Section 4 concludes the article by summarising the main findings, contributions, limitations, and directions for future research.

2. RESEARCH METHOD

2.1. Research Design and Analytical Framework

This study employed a quantitative cross-sectional survey design to examine the associations of Financial Literacy (FL) and Perceived Tax Digitalization (PTD) with MSME Tax Compliance (MTC) among MSME owners and managers in Central Java, Indonesia. FL and PTD were specified as the focal explanatory variables, MTC as the outcome variable, and Business Age (BA) as a control variable. The cross-sectional design was appropriate for examining respondents' reported financial practices, evaluations of digital tax services, and tax-compliance behavior at a single point in time. Accordingly, the findings are interpreted as statistical associations rather than causal effects.

The analytical framework adopts a user-centred perspective on Tax Digitalization. Tax Digitalization refers to the broader policy-level and administrative transformation of tax processes through digital technology, whereas PTD refers to the respondent-level evaluation examined empirically in this study. PTD captures taxpayers' experiences with digital tax services, particularly their use, ease of learning and operation, time efficiency, system reliability, convenience, and perceived security. This distinction allows the analysis to focus on how taxpayers experience and evaluate digital tax services rather than on the mere availability of digital tax infrastructure.

FL was conceptualised as an applied financial capability rather than tax knowledge alone. It concerns the ability to understand and use financial information in routine business and financial decision-making, including financial record keeping, separation of personal and business finances, cash-flow monitoring, financial

planning, and handling financial aspects of tax obligations. Tax-related knowledge is therefore treated as one component of broader Financial Literacy.

The analytical framework draws primarily on the Theory of Planned Behavior (TPB), particularly perceived behavioral control. Financial capability may be relevant to perceived behavioral control because it can support taxpayers in organising financial information and performing tax-related tasks. Similarly, favourable perceptions of digital tax services may be relevant when taxpayers perceive such services as easier to learn and use. The Slippery Slope Framework (SSF) provides a complementary perspective by emphasising trust, power, and the taxpayer–authority relationship. In this study, SSF contextualises PTD as part of the taxpayer’s interaction with the tax-administration environment. TPB and SSF are used as theoretical lenses rather than as complete frameworks whose full constructs are empirically tested.

The proposed associations were examined using multiple linear regression, with BA, FL, and PTD entered simultaneously:

$$MTC_i = \beta_0 + \beta_1 BA_i + \beta_2 FL_i + \beta_3 PTD_i + \varepsilon_i$$

Where MTC denotes self-reported MSME Tax Compliance, BA denotes Business Age in years, FL denotes the Financial Literacy composite score, PTD denotes the Perceived Tax Digitalization composite score, and ε represents the residual term. The term “jointly associated” refers to the simultaneous inclusion of FL and PTD in the same regression model and their combined statistical contribution within that model after accounting for BA; it does not imply an interaction or moderation effect.

2.2. Population, Sampling, and Participants

The target population comprised owners and managers of micro, small, and medium enterprises (MSMEs) operating in Central Java, Indonesia. The unit of analysis was the individual MSME owner or manager who was directly involved in the enterprise’s financial management or tax-related administration. Defining the individual owner or manager as the unit of analysis was consistent with the study’s focus on Financial Literacy, Perceived Tax Digitalization, and self-reported MSME Tax Compliance as respondent-level constructs.

Respondents were eligible to participate if they met four predetermined criteria: (1) they operated or managed an MSME in Central Java; (2) they were directly involved in the enterprise’s financial management or tax-related decisions; (3) the enterprise had established business tax obligations; and (4) the respondent had prior experience using at least one digital tax service. The final criterion was particularly relevant because Perceived Tax Digitalization (PTD) was operationalised as a respondent-level assessment of experience with digital tax services. Requiring prior exposure to such services helped ensure that PTD responses reflected actual user experience rather than general expectations about tax digitalization.

Purposive sampling was employed to identify participants who met these substantive eligibility requirements. This non-probability approach was appropriate because the study required respondents with direct knowledge of the financial and tax-related activities of the MSME they operated or managed, as well as prior experience with digital tax services. Participants were recruited through MSME associations, local business communities, and government-supported MSME networks. Questionnaires were distributed in both online and paper-based formats to accommodate differences in respondents’ access to digital tools and preferences for survey participation.

A total of 300 questionnaires were distributed during the data-collection period from September 22 to November 2, 2025. Of these, 272 questionnaires were returned, corresponding to a response rate of 90.7%. Screening resulted in the exclusion of 14 questionnaires because of incomplete responses and eight because the respondents did not meet the predetermined eligibility criteria. The final analytical sample comprised 250 complete and eligible observations, representing an effective response rate of 83.3% of the questionnaires distributed. All retained respondents satisfied the eligibility requirements, including established business tax obligations and prior experience with at least one digital tax service.

Because the study used purposive rather than probability sampling, the final sample should not be interpreted as statistically representative of the broader MSME population in Central Java. The empirical findings are therefore interpreted within the boundaries of the sampled MSME owners and managers who met the specified eligibility criteria, particularly those with direct responsibility for financial or tax-related activities and prior experience using digital tax services.

2.3. Data Collection Procedure and Ethics

Data were collected from September 22 to November 2, 2025, using a structured questionnaire administered in both online and paper-based formats. The questionnaire was prepared in Bahasa Indonesia to facilitate respondents’ comprehension and was designed to require approximately 10–15 minutes to complete. It consisted of questions on respondent and business characteristics and substantive measures of Financial Literacy, Perceived Tax Digitalization, and MSME Tax Compliance. The measurement items for the three substantive variables are described in Section 2.4.

Questionnaire distribution was facilitated through MSME associations, local business communities, and government-supported MSME networks. Both online and paper-based administration were used to

accommodate differences in respondents' access to digital devices, internet connectivity, and preferred modes of survey participation. Before completing the questionnaire, respondents received information about the purpose of the study and the use of the collected information for academic research. Participation was voluntary, and respondents could choose whether to provide identifying information. Completion of the questionnaire was treated as an indication of informed consent.

Privacy and confidentiality were considered throughout the data-collection procedure. The questionnaire did not require respondents to disclose personally identifying information as part of the substantive measures, and responses were treated confidentially and used solely for the purposes of the study. These safeguards were particularly relevant because the questionnaire included questions concerning financial practices, tax-related activities, perceptions of digital tax services, and self-reported compliance behavior.

Several procedural measures were also applied to reduce potential common-method bias arising from the collection of explanatory and outcome variables through the same self-administered questionnaire. The voluntary nature of participation, confidentiality of responses, and absence of a requirement to provide identifying information were intended to reduce evaluation apprehension and socially desirable responding. However, these procedures cannot fully eliminate common-method bias in cross-sectional, self-reported survey research (Podsakoff et al., 2003).

2.4. Variable Measurement

All multi-item constructs were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Higher scores indicate higher Financial Literacy (FL), more favourable Perceived Tax Digitalization (PTD), and stronger self-reported MSME Tax Compliance (MTC). Composite scores were calculated by summing the relevant item responses for each construct.

Financial Literacy was measured using seven items (X1–X7) covering financial recording, separation of personal and business finances, preparation of simple financial statements, monthly cash-flow monitoring, financial planning before major decisions, understanding of business tax calculations, and awareness of relevant tax-rule changes. The measure reflects applied financial capability, encompassing financial knowledge and the ability to use financial information in routine business and tax-related decisions (Graña-Alvarez et al., 2024; Huston, 2010; Lusardi & Mitchell, 2014).

Tax-related knowledge was treated as one practical component of the broader Financial Literacy construct rather than as a separate measure of tax knowledge. Perceived Tax Digitalization was measured using six items (Z1–Z6) addressing respondents' use of digital tax services, ease of learning and using the services, perceived time efficiency, system reliability, convenience in tax payment and reporting, and perceived security. The construct captures respondents' experience and evaluation of digital tax services rather than the mere availability or expansion of Tax Digitalization infrastructure. This operationalisation is consistent with research emphasising usability, reliability, trust, and service quality in digital public services (Janowski, 2015; Mergel et al., 2019; Turetzky et al., 2022).

MSME Tax Compliance was measured using seven items (Y1–Y7) covering timely tax reporting, payment in accordance with applicable provisions, accuracy of reported tax information, review of reports for accuracy, consistent compliance in the absence of an audit, recognition of compliance as a business responsibility, and prompt correction of tax-administration errors. The measure captures self-reported compliance behavior encompassing both formal compliance activities and voluntary compliance-oriented behavior (Alm, 2019; Andreoni et al., 1998; Kirchler et al., 2008).

Business Age (BA) was measured as the number of years the MSME had operated at the time of the survey. It was retained in its original numeric form and entered as a continuous control variable in the regression model. The operational definitions and measurement characteristics of all variables are summarised in Table 1.

Table 1. Operational Definitions and Measurement of Variables

Variable	Role	Code	No. of Items	Operational Focus	Measurement
Financial Literacy	Independent variable	X	7	Financial recording, separation of personal and business finances, simple financial reporting, cash-flow monitoring, financial planning, tax calculation, and tax-rule awareness	Five-point Likert scale
Perceived Tax Digitalization	Independent variable	Z	6	Use, ease of learning and use, time efficiency, system reliability, payment and reporting convenience, and perceived security of digital tax services	Five-point Likert scale

MSME Tax Compliance	Dependent variable	Y	7	Timely reporting, tax payment, accurate disclosure, verification, consistent compliance, responsibility, and correction of errors	Five-point Likert scale
Business Age	Control variable	BA	1	Number of years that the MSME had operated at the time of the survey	Continuous numeric variable, measured in years

Source: Authors' compilation based on the study questionnaire

2.5. Measurement Quality and Diagnostic Procedures

Measurement quality was assessed before the regression analysis by examining corrected item–total correlations and internal consistency. All 20 items across the Financial Literacy, Perceived Tax Digitalization, and MSME Tax Compliance scales had corrected item–total correlations above .30, and no item was removed from the final analysis. Cronbach's alpha coefficients were .761 for Financial Literacy, .789 for Perceived Tax Digitalization, and .808 for MSME Tax Compliance, indicating satisfactory internal consistency of the three multi-item measures (Cronbach, 1951). These results support the use of the corresponding composite scores in the subsequent analysis. They are interpreted as evidence of internal consistency and item performance rather than as conclusive evidence of construct validity.

Several diagnostic procedures were conducted before interpreting the regression estimates. Multicollinearity was assessed using tolerance and variance inflation factor (VIF) statistics. Tolerance values ranged from .646 to .992 and VIF values from 1.008 to 1.547, indicating no evidence of problematic multicollinearity among the predictors. Heteroskedasticity was examined using the Breusch–Pagan test (Breusch & Pagan, 1979), which was not statistically significant ($p = .883$). Residual independence was assessed using the Durbin–Watson statistic (Durbin & Watson, 1950). The obtained value of 2.300 did not indicate an apparent first-order autocorrelation problem. Residual normality was examined using the Shapiro–Wilk and Kolmogorov–Smirnov tests. Both tests were statistically significant ($p < .001$ and $p = .042$, respectively), indicating a departure from the normality assumption. This result was considered in assessing the robustness of inference rather than being treated as evidence that the regression model was automatically invalid.

As a sensitivity analysis, the regression estimates were additionally examined using HC3 heteroskedasticity-consistent robust standard errors. HC3 does not change the ordinary least squares coefficient estimates; rather, it provides an alternative basis for estimating standard errors and conducting statistical inference, with improved finite-sample properties reported for heteroskedasticity-consistent covariance estimation (MacKinnon & White, 1985). The substantive conclusions were unchanged under HC3 inference: Financial Literacy and Perceived Tax Digitalization remained positively associated with MSME Tax Compliance, whereas Business Age remained statistically non-significant. HC3 was therefore used to assess the stability of the inferential conclusions rather than as a correction for residual non-normality.

2.6. Statistical Analysis

The analysis proceeded in four stages. First, descriptive statistics were used to summarise the distribution of the study variables, including their central tendency and dispersion. Second, Pearson correlation analysis was conducted to examine the direction and strength of the bivariate associations among Business Age, Financial Literacy, Perceived Tax Digitalization, and MSME Tax Compliance. These analyses provided an initial description of the relationships among the study variables before the multivariable analysis.

Third, multiple linear regression was employed to examine the associations of Financial Literacy and Perceived Tax Digitalization with MSME Tax Compliance while controlling for Business Age. The three predictors were entered simultaneously into the regression model. This specification enabled the coefficients of Financial Literacy and Perceived Tax Digitalization to be interpreted as their estimated independent associations with MSME Tax Compliance conditional on the other variables in the model. The individual regression coefficients were evaluated using two-tailed tests at the 5% significance level ($\alpha = .05$). H1 was supported when Financial Literacy showed a positive and statistically significant coefficient, while H2 was evaluated using the corresponding coefficient for Perceived Tax Digitalization. H3 was assessed through the statistical significance of the overall regression model and the combined inclusion of Financial Literacy and Perceived Tax Digitalization as focal predictors after accounting for Business Age. In accordance with the analytical framework, H3 does not represent an interaction or moderation hypothesis.

Model fit was assessed using the coefficient of determination (R^2), which indicates the proportion of variance in self-reported MSME Tax Compliance accounted for by the full set of predictors within the sample. The overall significance of the regression model was evaluated using the F-test. The conventional ordinary least squares results were subsequently compared with estimates obtained using HC3 heteroskedasticity-

consistent robust standard errors as a sensitivity analysis. The robustness analysis focused on whether the statistical conclusions regarding the direction and significance of the predictor associations remained substantively unchanged.

3. RESULTS AND DISCUSSION

3.1. Measurement Quality and Descriptive Statistics

A total of 250 valid observations were included in the analysis. The MSMEs represented in the sample had operated for between 3 and 9 years, with a mean Business Age of 5.30 years ($SD = 1.50$). The mean Financial Literacy (FL) score was 29.32 out of a possible 35 ($SD = 2.85$), while the mean Perceived Tax Digitalization (PTD) score was 24.62 out of a possible 30 ($SD = 3.38$). The mean MSME Tax Compliance (MTC) score was 28.98 out of a possible 35 ($SD = 3.59$). Overall, the respondents reported relatively favourable levels of financial capability, evaluations of digital tax services, and self-reported tax-compliance behavior.

Measurement quality was assessed through corrected item–total correlations and internal consistency. The corrected item–total correlations ranged from .325 to .707 for FL, .336 to .790 for PTD, and .311 to .721 for MTC. All 20 items exceeded the .30 criterion and were retained in the analysis. Cronbach's alpha coefficients were .761 for FL, .789 for PTD, and .808 for MTC, indicating satisfactory internal consistency across the three multi-item measures.

Table 2. Descriptive Statistics and Internal Consistency

Variable	No. of Items	Minimum	Maximum	Mean	SD	Cronbach's α
Business Age, years	1	3.00	9.00	5.30	1.50	—
Financial Literacy	7	16.00	35.00	29.32	2.85	.761
Perceived Tax Digitalization	6	17.00	30.00	24.62	3.38	.789
MSME Tax Compliance	7	23.00	35.00	28.98	3.59	.808

Note. Financial Literacy, Perceived Tax Digitalization, and MSME Tax Compliance are composite scores obtained by summing their respective Likert-scale items.

The relatively high mean scores should be interpreted in relation to the characteristics of the sample. The respondents were MSME owners and managers who had established business tax obligations and prior experience using at least one digital tax service. The descriptive results therefore characterise the purposively selected sample rather than providing population estimates for all MSMEs in Central Java.

3.2. Correlation Analysis

Pearson correlation analysis was conducted to examine the bivariate associations among Business Age, FL, PTD, and MTC. FL was positively associated with MTC ($r = .566$, $p < .001$), while PTD showed a stronger positive association with MTC ($r = .829$, $p < .001$). FL was also positively correlated with PTD ($r = .591$, $p < .001$).

Business Age did not show statistically significant associations with FL ($r = .084$, $p = .188$), PTD ($r = .023$, $p = .722$), or MTC ($r = .019$, $p = .768$). Thus, within the present sample, the number of years an MSME had operated was not significantly related to the focal variables at the bivariate level.

Table 3. Pearson Correlations Among Study Variables

Variable	1	2	3	4
1. Business Age	1.000			
2. Financial Literacy	.084	1.000		
3. Perceived Tax Digitalization	.023	.591***	1.000	
4. MSME Tax Compliance	.019	.566***	.829***	1.000

Note. *** $p < .001$, two-tailed.

The positive association between FL and PTD indicates that respondents reporting stronger financial capability also tended to evaluate digital tax services more favourably. At the same time, the correlation does not justify treating the two constructs as interchangeable. They represent different dimensions of the study's analytical framework: FL reflects an internal financial capability, whereas PTD captures the respondent's evaluation of the digital tax-service environment.

3.3. Multiple Regression Results

Multiple linear regression was conducted to estimate the associations of FL and PTD with MTC while controlling for Business Age. All three predictors were entered simultaneously. The overall regression model was statistically significant, $F(3, 246) = 188.744$, $p < .001$. The model produced an R^2 of .697 and an adjusted R^2 of .693, indicating that the full set of predictors accounted for 69.7% of the variance in self-reported MTC within the sample.

Table 4. Multiple Regression Results for MSME Tax Compliance

Predictor	B	SE	β	t	p	Decision
Constant	4.868	1.360	—	3.579	< .001	—
Business Age	-0.020	0.084	-.010	-0.234	.815	Not supported
Financial Literacy	0.149	0.055	.118	2.702	.007	H1 supported
Perceived Tax Digitalization	0.807	0.046	.760	17.467	< .001	H2 supported

Note. Dependent variable = MSME Tax Compliance. B = unstandardized coefficient; SE = standard error; β = standardized coefficient.

The estimated regression equation was:

$$\text{MTC} = 4.868 - 0.020(\text{BA}) + 0.149(\text{FL}) + 0.807(\text{PTD})$$

FL was positively associated with MTC ($B = 0.149$, $\beta = .118$, $p = .007$), supporting H1. Holding Business Age and PTD constant, a one-point increase in the summed FL score was associated with an estimated 0.149-point increase in the MTC score.

PTD was also positively associated with MTC ($B = 0.807$, $\beta = .760$, $p < .001$), supporting H2. Holding Business Age and FL constant, a one-point increase in the summed PTD score was associated with an estimated 0.807-point increase in the MTC score. The standardized coefficient for PTD was substantially larger than that for FL, indicating a stronger standardized association with MTC within the present sample and model. Business Age had a small negative but statistically non-significant coefficient ($B = -0.020$, $\beta = -.010$, $p = .815$). After FL and PTD were controlled for, one additional year of business operation was not associated with a statistically reliable difference in self-reported MTC. H3 was supported in accordance with its operational definition in this study. FL and PTD were simultaneously included as focal predictors in a statistically significant regression model after Business Age was controlled for. Thus, H3 represents their joint statistical contribution within the same regression model and should not be interpreted as evidence of an interaction or moderation effect.

3.4. Diagnostic and Sensitivity Analysis

The regression diagnostics indicated no serious multicollinearity among the predictors. VIF values ranged from 1.008 to 1.547, while tolerance values ranged from .646 to .992. The Breusch–Pagan test was not statistically significant ($p = .883$), providing no evidence of heteroskedasticity. The Durbin–Watson statistic was 2.300, which did not indicate a material first-order autocorrelation problem.

Formal tests of residual normality produced statistically significant results. The Shapiro–Wilk test was significant ($p < .001$), as was the Kolmogorov–Smirnov test ($p = .042$), indicating departure from residual normality. This finding was considered in evaluating the robustness of statistical inference rather than being treated as grounds for automatically rejecting the regression model.

As a sensitivity analysis, regression inference was additionally examined using HC3 heteroskedasticity-consistent robust standard errors. HC3 does not change the OLS coefficient estimates; rather, it provides an alternative basis for estimating standard errors and conducting hypothesis tests. The HC3 analysis yielded the same substantive conclusions as the conventional OLS results. FL remained positively and statistically significantly associated with MTC ($p = .008$), PTD remained positively and statistically significantly associated with MTC ($p < .001$), and Business Age remained statistically non-significant ($p = .792$).

Table 5. Regression Diagnostics and HC3 Sensitivity Analysis

Diagnostic / Sensitivity Indicator	Result	Interpretation
VIF: Business Age	1.008	No multicollinearity concern
VIF: Financial Literacy	1.547	No multicollinearity concern
VIF: Perceived Tax Digitalization	1.537	No multicollinearity concern
Tolerance range	.646–.992	Above .10 threshold
Breusch–Pagan test	$p = .883$	No evidence of heteroskedasticity
Durbin–Watson	2.300	No material first-order autocorrelation
Shapiro–Wilk	$p < .001$	Residual normality rejected
Kolmogorov–Smirnov	$p = .042$	Residual normality rejected
HC3: Financial Literacy	Positive, significant	Conclusion unchanged
HC3: Perceived Tax Digitalization	Positive, significant	Conclusion unchanged
HC3: Business Age	Not significant	Conclusion unchanged

Note. HC3 refers to heteroskedasticity-consistent robust standard errors and is reported as a sensitivity analysis.

3.5. Discussion of Findings

The findings provide empirical support for the study's central perspective that MSME Tax Compliance is associated with both an internal capability dimension and an external digital-service experience. The two focal variables were statistically significant when examined simultaneously, although PTD exhibited a

substantially stronger standardized association with MTC than FL. This pattern is consistent with the conceptual distinction established in the Introduction between Financial Literacy as an applied financial capability and Perceived Tax Digitalization as a user-level evaluation of the digital tax-service environment.

The positive association between FL and MTC supports H1 and is consistent with the view that financial literacy involves not only financial knowledge but also the capacity to apply financial information in practical decisions (Huston, 2010; Lusardi & Mitchell, 2014). For MSME owners and managers, routine financial practices such as recording income and expenses, separating business and personal finances, monitoring cash flow, and planning for financial obligations can provide a practical basis for organising information and resources relevant to tax reporting and payment. The result complements previous SME research linking Financial Literacy with managerial capability and financial behavior (Graña-Alvarez et al., 2024; Molina-García et al., 2023; Rekha et al., 2025), while extending this perspective to self-reported tax-compliance behavior.

The association between FL and MTC is also compatible with the Theory of Planned Behavior (TPB), particularly the concept of perceived behavioral control (Ajzen, 1991). Financial capability may be relevant to an individual's perceived ability to perform compliance-related tasks because owners who can organise financial information and understand relevant obligations may encounter fewer practical difficulties in carrying out those tasks. However, perceived behavioral control was not directly measured in this study. The TPB therefore provides a theoretical interpretation of the observed relationship rather than evidence of a tested mediating mechanism.

PTD showed the strongest standardized association with MTC, supporting H2. This finding gives particular importance to the distinction between Tax Digitalization and Perceived Tax Digitalization developed in the study. Tax Digitalization describes the broader policy and administrative transformation of tax processes through digital technology, whereas PTD captures how users evaluate their experience of the resulting digital tax services. The present findings indicate that the user-level dimension is strongly associated with self-reported tax compliance among the sampled MSME owners and managers.

The result is consistent with research on digital government that emphasises usability, reliability, service quality, and user experience as important dimensions of effective digital public services (Janowski, 2015; Mergel et al., 2019; Turetzky et al., 2022). It also accords with evidence that digital tax instruments can support tax administration when digital implementation is accompanied by institutional capacity and appropriate taxpayer assistance (Bellon et al., 2022; Hesami et al., 2024). For MSMEs, these considerations are particularly relevant because tax-related administrative tasks may be performed directly by owners or managers rather than by specialised personnel. A digital tax service may therefore be technically available while still presenting practical barriers if it is difficult to learn, unreliable, inconvenient, or perceived as insecure.

The strong PTD–MTC association should nevertheless be interpreted as an empirical association rather than a causal effect. Because both variables were measured at the same point in time, the analysis cannot determine whether favourable digital-service experiences lead to stronger compliance, whether more compliant taxpayers evaluate digital services more favourably, or whether both are partly related to other unobserved characteristics. The magnitude of the standardized coefficient should therefore be understood as evidence of a strong statistical relationship within the sampled respondents, not as proof that digitalisation alone determines compliance.

The findings also provide support for H3 in the limited sense specified by the study design. FL and PTD were statistically significant focal predictors when entered simultaneously in a model that also controlled for Business Age. This result reinforces the usefulness of examining internal capability and external service experience together rather than treating either dimension as a complete explanation of MSME tax compliance. Importantly, the result does not establish an interaction between FL and PTD because no interaction term was estimated. The contribution of the two predictors is therefore interpreted as simultaneous association within the regression model.

The non-significant coefficient for Business Age provides a further contextual finding. Within the present sample, the number of years an MSME had operated was not independently associated with MTC after FL and PTD were controlled for. This suggests that business longevity alone may provide limited information about current compliance behavior when more immediate characteristics of financial capability and digital-service experience are considered. The finding should not be interpreted as evidence that business experience is universally irrelevant to tax compliance, particularly because the restricted range of Business Age in the sample may limit the ability to detect associations.

The practical implications follow from the user-centred nature of the findings. Tax authorities and related institutions should consider digital tax administration not only as an infrastructure or technology initiative but also as a service-quality issue. Ease of learning and operation, system reliability, convenience during payment and reporting, perceived security, clear guidance, and accessible assistance are relevant dimensions of the taxpayer experience. At the same time, MSME-support programmes can strengthen practical financial capability through bookkeeping, cash-flow monitoring, financial planning, tax calculation, payment preparation, reporting procedures, and error correction. The results suggest that attention to both dimensions is warranted, although the cross-sectional design does not establish that either type of intervention would necessarily produce higher compliance.

Several limitations qualify the interpretation of these findings. First, the cross-sectional design prevents causal inference and does not capture changes in compliance or digital-service experience over time. Second, purposive sampling limits generalisation beyond MSME owners and managers who met the study's eligibility criteria, particularly those with established tax obligations and prior experience using digital tax services. Third, the focal variables were self-reported by the same respondents, so common-method and social-desirability bias cannot be completely ruled out. Finally, the present measurement assessment focused on item performance and internal consistency and therefore does not provide a complete test of construct validity. Future research should employ longitudinal and, where feasible, probability-based designs, further refine the measurement instruments, and examine construct distinctiveness using confirmatory factor analysis in an independent sample. Future studies may also examine whether trust, digital literacy, or other taxpayer–authority characteristics condition the observed relationships.

4. CONCLUSION

This study examined the associations of Financial Literacy (FL) and Perceived Tax Digitalization (PTD) with MSME Tax Compliance (MTC) among 250 MSME owners and managers in Central Java, Indonesia, while controlling for Business Age. The study distinguished Tax Digitalization as a broader policy-level and administrative transformation from PTD as a respondent-level evaluation of digital tax-service experience. It also conceptualised FL as an applied financial capability rather than tax knowledge alone. This distinction provided the basis for examining internal financial capability and external digital-service experience as complementary dimensions of the conditions surrounding MSME tax compliance.

The empirical findings indicate that both FL and PTD were positively and significantly associated with MTC when examined simultaneously in the multiple regression model. FL showed a positive association with MTC, supporting H1, while PTD also showed a positive association, supporting H2. PTD exhibited the stronger standardized association with MTC within the present sample and model. Business Age was not statistically significant after FL and PTD were controlled for. The overall regression model was statistically significant and accounted for 69.7% of the variance in self-reported MTC within the sample. The results were substantively stable when HC3 heteroskedasticity-consistent robust standard errors were applied.

The findings provide support for the study's user-centred perspective on digital tax administration. They suggest that understanding MSME tax compliance requires attention not only to the existence of digital tax infrastructure but also to how users experience and evaluate the services through which digitalisation is implemented. At the same time, the significant association of FL with MTC indicates the relevance of practical financial capability in enabling MSME owners and managers to organise financial information and undertake routine financial and tax-related tasks. Considered together, the findings support the value of examining taxpayer capability and digital-service experience within the same empirical model.

The study contributes to the literature by bringing these two dimensions into a common analytical setting and by providing evidence from MSMEs in Central Java, a subnational context within Indonesia. The distinction between Tax Digitalization and PTD also offers a more user-oriented way of examining digital tax administration. For practice, the findings suggest that digital tax-service development should continue to consider usability, reliability, convenience, security, and taxpayer assistance alongside technological implementation. MSME support initiatives may likewise benefit from strengthening practical financial capabilities relevant to record keeping, financial planning, tax calculation, and compliance-related administration.

These conclusions should be interpreted within the study's methodological boundaries. The cross-sectional design does not establish causal relationships or temporal direction between the variables. Purposive sampling also limits generalisation beyond the sampled MSME owners and managers who met the study's eligibility criteria, including prior experience with digital tax services. In addition, the use of self-reported measures means that common-method and social-desirability bias cannot be completely excluded. Future research could address these limitations through longitudinal and probability-based sampling designs, further refinement and validation of the measurement instruments, including confirmatory factor analysis in independent samples, and examination of contextual factors such as trust and digital literacy. Such research would help determine whether the associations identified in this study remain stable across different MSME populations and over time.

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