Factors Affecting Tax Compliance Among Household Businesses in the Context of Digital Transformation in Vietnam's Northern Central Highlands

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Abstract
Tax compliance among household businesses has become increasingly important in the context of digital transformation, particularly as tax administrations adopt digital technologies to improve the efficiency, transparency, and accessibility of tax-related services. However, household businesses may face persistent challenges arising from differences in tax knowledge, digital capabilities, perceptions of fairness, and trust in tax authorities. This study examines the factors influencing tax compliance among household businesses in the Northern Central Highlands of Vietnam. Drawing on the Theory of Planned Behavior and the Slippery Slope Framework, the proposed research model investigates seven determinants: tax attitude, perceived behavioral control, trust in tax authorities, perceived tax enforcement, perceived tax fairness, tax knowledge, and digital tax capability. The study adopts a quantitative research design using a structured questionnaire and partial least squares structural equation modeling (PLS-SEM) to examine the relationships between these factors and tax compliance. In the illustrative results presented in the research demo, all seven factors exhibit positive and statistically significant relationships with tax compliance. Tax knowledge, digital tax capability, and perceived behavioral control show comparatively stronger effects. These preliminary findings suggest that improving tax compliance requires more than enforcement alone; it also involves strengthening taxpayers' knowledge, enhancing their capacity to use digital tax services, and supporting their ability to fulfill tax obligations independently. The study provides a proposed analytical framework for understanding household business tax compliance in the Northern Central Highlands and offers practical implications for designing more accessible, equitable, and taxpayer-oriented digital tax administration policies.

Keywords: *household businesses; tax compliance; digital transformation; tax knowledge; digital tax capability; perceived behavioral control; Northern Central Highlands of Vietnam.*

1. Introduction

Amid the rapid progress of digital transformation, modernising tax administration and improving taxpayers' compliance with tax law have become important priorities in public financial management. The application of information technology, the development of electronic tax services, and the wider adoption of e-invoices are gradually changing the ways in which business activities are declared, taxed, and administered. In Vietnam, Government Decree No. 70/2025/ND-CP amends and supplements several provisions on invoices and documents, including requirements concerning e-invoices generated from cash registers for entities subject to these

requirements (Government of Vietnam, 2025). These changes create opportunities to improve transparency, facilitate information cross-checking, and enhance tax-administration effectiveness, while also placing greater demands on taxpayers to keep abreast of policy changes, use technology, and fulfil their tax obligations.

Household businesses warrant particular attention because they vary considerably in scale, business sector, financial resources, and managerial capacity. Their access to policy information, knowledge of tax law, and digital skills may differ substantially. As tax procedures increasingly move to digital platforms, these differences may affect the accuracy of tax declarations, timely fulfilment of obligations, and proactive compliance with legal requirements. Digital transformation is therefore not merely a change in administrative tools; it also raises questions about taxpayers' capacity to adapt and their compliance behaviour. Investigating the factors affecting household businesses' tax compliance in this context is practically important for designing appropriate support policies and improving the transparency and effectiveness of tax administration.

Theoretically, tax compliance can be explained from several perspectives. Ajzen's (1991) Theory of Planned Behavior (TPB) proposes that behavioural intention is influenced by attitude toward the behaviour, subjective norms, and perceived behavioural control. This theory provides a basis for examining the role of attitudes toward tax obligations and household businesses' perceptions of their ability to complete tax procedures. Kirchler et al. (2008), through the Slippery Slope Framework (SSF), emphasise the roles of trust in tax authorities and tax authorities' power in explaining voluntary compliance and enforced compliance. Combining these approaches makes it possible to examine tax compliance not only in terms of taxpayers' perceptions and capabilities, but also in terms of their relationship with the tax administration and the way tax law is enforced.

Empirical studies have provided important evidence on factors associated with tax compliance among household businesses. In Vietnam, Khuc and Nguyen (2021) surveyed 215 household-business owners in Ho Chi Minh City and identified five factors associated with tax compliance: tax rates, tax knowledge, tax penalties, personal norms, and perceived fairness of the tax system. Their findings indicate that compliance should be examined in relation to knowledge, individual perceptions, and tax-policy characteristics. Bui (2026), as cited in the materials used for this study, also proposes a model of factors affecting household businesses' tax-compliance behaviour in Vietnam, providing a reference for developing a model suited to a specific context.

Alongside behavioural and institutional factors, digital transformation has become an increasingly relevant perspective in tax-compliance research. Nguyen et al. (2026), in a study of household businesses in Hanoi, examine the role of digital technology in business operations, the use of e-tax services, e-invoices and digital payments, digital capability and awareness, and government support policies in tax-declaration compliance. Their study suggests that technological conditions and taxpayers' adaptive capacity should be considered alongside traditional factors such as tax knowledge, perceived fairness, and enforcement mechanisms. However, findings from one location cannot automatically be generalised to other regions, given differences in socioeconomic conditions, business structures, and access to technology.

The research gap is identified in two respects. First, although previous studies have examined behavioural, perceptual, institutional, and technological factors associated with tax compliance, the simultaneous examination of these factors within a single model still requires testing in specific contexts. In particular, the relationships of attitudes toward tax, perceived behavioural control, trust in tax authorities, perceived tax enforcement, tax fairness, tax knowledge, and digital tax capability and access need to be assessed using appropriate empirical data. Second, within the

literature reviewed for this study, no published study was identified that directly tested all these factors simultaneously in relation to household businesses' tax compliance in the context of digital transformation in the Northern Central Highlands. This observation is limited to the literature reviewed and does not imply that no related research has ever been conducted in the region.

Against this background, the study, entitled "Factors Affecting Tax Compliance among Household Businesses in the Context of Digital Transformation in the Northern Central Highlands of Vietnam," examines the effects of seven factors: attitude toward tax, perceived behavioural control, trust in tax authorities, perceived tax enforcement, perceived tax fairness, tax knowledge, and digital tax capability and access. These factors were selected by integrating behavioural theories of tax compliance with empirical evidence related to digital transformation in tax administration. Based on survey data from the study area, the analysis aims to identify the factors that significantly affect tax compliance and estimate the magnitude of their effects, thereby identifying priorities for tax administration and support.

Scientifically, the study is expected to add empirical evidence on household businesses' tax-compliance behaviour amid digital transformation in the Northern Central Highlands and to assess the applicability of existing theoretical approaches and research findings to a specific local context. Practically, the findings may inform managerial implications concerning the enhancement of tax knowledge, the strengthening of taxpayers' trust, greater transparency in policy enforcement, and improved access to digital tax services. Ultimately, the study seeks to help household businesses fulfil their tax obligations more conveniently, accurately, and promptly, while contributing to more effective tax administration during digital transformation.

2. Literature Review

2.1. Studies in Vietnam

Research on tax compliance in Vietnam has gradually expanded from economic factors and penalties to behavioural and perceptual factors, tax fairness, and the conditions under which tax obligations are fulfilled. In recent years, the development of electronic tax services and the digital-transformation agenda in tax administration have opened up new research directions, particularly in relation to household businesses and small enterprises.

One empirical study directly relevant to household businesses is Khuc and Nguyen (2021) "Determinants Affecting Tax Compliance: A Case of Business Households in Ho Chi Minh City, Vietnam." The study surveyed 215 household-business owners in Ho Chi Minh City between June and July 2020. The data were analysed using scale-reliability assessment, exploratory factor analysis, Pearson correlation, and regression. Five factors were identified, in the reported order of influence: tax rates, tax knowledge, tax penalties, personal norms, and perceived fairness of the tax system. Tax rates were negatively associated with compliance, whereas the other four factors were positively associated with it (Khuc & Nguyen, 2021). This study provides empirical grounds for including tax knowledge, tax fairness, and enforcement mechanisms in the present model. However, it was conducted in a major urban area and did not focus on digital tax capability in the Northern Central Highlands.

At the level of small and medium-sized enterprises (SMEs), Nguyen et al. (2025), in "Tax Knowledge and Tax Compliance of the Small and Medium Enterprises in Vietnam," analysed data from 326 enterprises using structural equation modelling and PLS-SEM. The study examined tax knowledge, perceived opportunities for non-compliance, and perceived tax losses. The findings suggest that the relationship between tax knowledge and compliance is not necessarily direct; mediating factors related to opportunities for non-compliance and perceived losses also play a role.

This indicates that tax knowledge may not automatically lead to compliance when taxpayers are also influenced by economic incentives and other conditions (Nguyen et al., 2025). Although the study focused on SMEs rather than household businesses, it offers a useful reference for theorising the role of tax knowledge and explaining variation in compliance behaviour.

In the context of digital transformation, Nguyen et al. (2026) conducted "Impact of Digital Transformation on Tax Declaring Household Businesses in Hanoi." The study collected data from 321 household businesses in Hanoi and analysed them using SmartPLS. Five groups of factors associated with tax-declaration compliance were identified: the use of digital technology in business operations; the use of e-tax services; the adoption of e-invoices and digital payments; digital capability and awareness; and government support policies. The study also examined the mediating role of tax-declaration compliance in the relationship between digital transformation and business performance (Nguyen et al., 2026). This research is directly relevant to the present study because it highlights the importance of technological factors and taxpayers' capabilities alongside traditional behavioural factors. However, it was conducted in Hanoi and focused on tax-declaration compliance; its findings therefore need to be tested using data from the Northern Central Highlands.

In addition to empirical studies, Bui (2026) proposes a research model of factors affecting household businesses' tax-compliance behaviour in Vietnam. The model combines TPB, SSF, tax-fairness theory, and the tax-knowledge approach. The proposed factors are attitude toward tax, perceived behavioural control, trust in tax authorities, perceived tax enforcement, tax fairness, and tax knowledge (Bui, 2026). Its value lies in organising behavioural, institutional, and perceptual factors into a model designed for household businesses in Vietnam. Since this is a proposed model, its theoretical propositions should be distinguished from empirically validated findings. It can provide a basis for developing hypotheses and measurement scales, but still requires adaptation and testing in a specific research context.

Overall, domestic studies have begun to clarify the roles of tax knowledge, tax rates, penalties, tax fairness, and digital-transformation-related factors in tax compliance. However, these studies involve different locations and populations and use approaches and dependent variables that are not entirely equivalent. In particular, the Hanoi study focuses on digital transformation and tax-declaration compliance, whereas the Ho Chi Minh City study examines broader determinants of household-business tax compliance. These differences support the need to test the model in specific local contexts and to examine the relationship between traditional behavioural factors and digital tax capability.

2.2. International Studies

Internationally, tax compliance has been investigated in public economics, economic psychology, and behavioural science. This literature provides theoretical foundations for explaining why taxpayers do or do not fulfil their tax obligations and clarifies the roles of penalties, knowledge, trust, fairness, and tax-administration systems.

Andreoni et al. (1998), in their review "Tax Compliance," synthesised economic research on tax compliance, with a focus on personal income tax. The review examined theoretical approaches and empirical evidence relating to law enforcement, non-compliance, and tax-administration measures. It demonstrated that tax compliance is multidimensional and cannot be fully explained by a single economic factor (Andreoni et al., 1998). Although the review did not focus specifically on household businesses, it provides an important foundation for considering economic motives, the probability of detection, and behavioural factors together.

From a behavioural perspective, Ajzen (1991) developed the Theory of Planned Behavior (TPB), in which attitude toward a behaviour, subjective norms, and perceived behavioural control help explain behavioural intention; intention and perceived control also contribute to predicting actual behaviour. Although TPB was not developed specifically for taxation, it provides a basis for analysing how attitudes and perceived ability to fulfil obligations may relate to tax-compliance behaviour. When applying TPB to household businesses, researchers should define the measurement content carefully and avoid treating compliance intention as equivalent to actual compliance.

Another important approach is Kirchler et al. (2008) Slippery Slope Framework (SSF), which emphasises the interaction between trust in tax authorities and the power of tax authorities. Under this framework, trust can foster voluntary compliance, whereas enforcement power, audit capacity, and sanctions are associated with enforced compliance. The authors also discuss the roles of knowledge, attitudes, norms, penalties, and perceived fairness in tax compliance (Kirchler et al., 2008). This framework provides a suitable theoretical basis for including trust in tax authorities and perceived tax enforcement in the present model.

At the level of household businesses and small enterprises, Adams and Webley (2001) examined small-business owners' attitudes toward value-added tax compliance in the United Kingdom. Using qualitative interviews with business owners in several sectors, the study found that business owners' perceptions of tax obligations, fairness, and penalties were related to how they understood and handled VAT in their operations. The study also discussed "mental accounting," whereby business owners may view tax collected from customers either as business funds or as money belonging to the tax authority (Adams & Webley, 2001). Although qualitative and conducted under the UK tax system, this study offers useful insight into the role of attitudes and perceptions of tax obligations among small-business owners.

Bani-Khalid et al. (2022) investigated factors affecting SMEs' tax-compliance intentions in Jordan using an extended TPB model. The study surveyed managers or owners of manufacturing SMEs and examined factors associated with the intention to fulfil sales-tax obligations. It illustrates how TPB can be applied in a business context and suggests that behavioural factors should be considered in relation to the institutional environment and specific tax obligations (Bani-Khalid et al., 2022). However, its dependent variable was tax-compliance intention, which should not be treated as equivalent to evidence about actual tax compliance among household businesses.

Tax knowledge and education have also been examined among small businesses. Mukhlis et al. (2015) studied the role of tax education in tax knowledge, perceived fairness, and tax compliance among SMEs in the handicraft sector in Indonesia. Using structural equation modelling and PLS, the study found a positive relationship between tax education and tax knowledge; tax knowledge was also positively related to perceived fairness and tax compliance. Perceived fairness was, in turn, positively associated with tax compliance (Mukhlis et al., 2015). These findings support the inclusion of tax knowledge and fairness in the present model, although results from Indonesian SMEs need to be retested for household businesses in Vietnam.

In the context of digital transformation, the Organisation for Economic Co-operation and Development (OECD, 2020) published "Tax Administration 3.0: The Digital Transformation of Tax Administration," outlining a vision of integrating tax processes into taxpayers' and businesses' operational environments. The report highlights the potential of digital technologies to make interactions between taxpayers and tax authorities more convenient, reduce administrative burdens, and modernise tax administration. Building on this direction, the OECD (2025) summarises digitalisation and digital-transformation initiatives among tax authorities in various

countries, indicating that the use of technology in administration, data collection, service delivery, and compliance management is becoming increasingly important. These are policy reports rather than survey studies of household businesses in the Northern Central Highlands; nevertheless, they provide international practical context for examining digital capability and access to e-tax services. Taken together, international studies show that tax compliance is shaped by a combination of economic, psychological, social, and institutional factors. TPB provides a basis for examining attitudes and perceived behavioural control; SSF emphasises trust and enforcement power; studies of small businesses provide evidence on fairness, knowledge, and perceptions of tax obligations; and OECD reports clarify the context of digital transformation in tax administration. This literature suggests that a model of household-business tax compliance should combine behavioural and institutional factors with the capacity to fulfil obligations in a digital environment, rather than focusing exclusively on penalties or tax knowledge.

3. Research Model and Hypotheses

3.1. Basis for the Proposed Research Model

Tax compliance has been studied from several perspectives, including perceptions, attitudes, the ability to fulfil obligations, trust in tax authorities, and tax-law enforcement. For household businesses, compliance involves not only paying taxes but also declaring information, providing supporting documents, and completing required procedures. Accordingly, the factors affecting tax compliance should be examined by considering both taxpayers' behavioural characteristics and the conditions under which tax obligations are fulfilled.

The Theory of Planned Behavior (TPB) developed by Ajzen (1991) posits that attitude toward a behaviour, subjective norms, and perceived behavioural control contribute to behavioural intention and help predict behaviour. In tax-compliance research, this approach provides a basis for examining attitudes toward tax and household businesses' perceived ability to fulfil their obligations. The present study applies TPB selectively, focusing on components relevant to explaining household businesses' tax-compliance levels.

The Slippery Slope Framework (SSF) further emphasises the roles of trust in tax authorities and the authorities' enforcement power in explaining voluntary and enforced compliance (Kirchler et al., 2008). From this perspective, trust may encourage taxpayers' voluntary cooperation, while audit, monitoring, and sanctions may motivate compliance through enforcement. Perceived fairness and tax knowledge are also relevant dimensions in analysing compliance behaviour.

In Vietnam, Khuc and Nguyen (2021) examined factors affecting household-business tax compliance in Ho Chi Minh City using a survey of 215 owners. Their results identified tax rates, tax knowledge, tax penalties, personal norms, and perceived fairness of the tax system as factors associated with compliance. This study provides relevant empirical evidence for selecting variables in research on household businesses in Vietnam.

Notably, Bui Thi Thuy (2026) proposed a model of household-business tax-compliance behaviour in Vietnam by combining TPB, SSF, tax-fairness theory, and the tax-knowledge approach. The model includes six factors: attitude toward tax, perceived behavioural control, trust in tax authorities, perceived tax enforcement, tax fairness, and tax knowledge. The present study selectively adopts and develops this model for a specific geographical and research context.

The present study focuses on the Northern Central Highlands amid the digital transformation of tax administration. The expansion of e-tax services, e-invoices, and data-driven administration makes the ability to access and use technology a relevant dimension in analysing how household businesses fulfil their tax obligations. Nguyen et al.'s (2026) study of household businesses in

Hanoi considered digital technology in business operations, e-tax services, e-invoices, digital payments, digital capability, and government support policies. Its findings provide an empirical basis for further examining the relationship between digital capability and tax compliance across different geographical settings.

Based on these arguments, the present study adopts six factors from Bui Thi Thuy's (2026) proposed model and adds digital tax capability and access. This additional factor is intended to assess whether the ability to access tax information, use electronic tools, and complete tax procedures online is associated with household businesses' tax-compliance levels in the Northern Central Highlands. The proposed model therefore includes seven independent variables: (1) attitude toward tax; (2) perceived behavioural control; (3) trust in tax authorities; (4) perceived tax enforcement; (5) perceived tax fairness; (6) tax knowledge; and (7) digital tax capability and access. The dependent variable is household businesses' tax compliance.

3.2. Development of Research Hypotheses

Attitude toward Tax (ATT)

According to Ajzen (1991), attitude reflects an individual's positive or negative evaluation of a behaviour and plays a role in forming the intention to perform it. In taxation, a positive attitude is reflected in household businesses' recognition that tax obligations are necessary, acceptance of their responsibility to comply, and willingness to observe legal requirements. A positive attitude is expected to encourage more proactive and conscientious completion of tax procedures. Accordingly, the study proposes:

H1: A positive attitude toward tax has a positive effect on household businesses' tax-compliance levels.

Perceived Behavioural Control (PBC)

Perceived behavioural control refers to the extent to which individuals believe they have the ability and resources needed to perform a behaviour (Ajzen, 1991). For household businesses, it may involve the ability to understand regulations, determine tax obligations, prepare relevant information, and complete tax procedures. When businesses believe they possess sufficient knowledge, skills, and resources to meet tax-administration requirements, barriers to fulfilling their obligations may be reduced. Therefore:

H2: Perceived behavioural control has a positive effect on household businesses' tax-compliance levels.

Trust in Tax Authorities (TRUST)

According to Kirchler et al. (2008), trust in tax authorities is an important foundation of voluntary tax compliance. When household businesses trust the transparency, fairness, and support capacity of tax authorities, they may be more willing to cooperate and fulfil their tax obligations proactively. In a digital-transformation context, trust may also be associated with the clarity of guidance and consistency in tax procedures. Thus:

H3: Trust in tax authorities has a positive effect on household businesses' tax-compliance levels.

Perceived Tax Enforcement (ENF)

The SSF suggests that tax authorities' enforcement power, reflected in their ability to audit, detect, and sanction violations, plays a role in promoting tax compliance (Kirchler et al., 2008). In this study, perceived tax enforcement refers to household businesses' assessments of the likelihood

that non-compliance will be detected and addressed, as well as the rigor and consistency of enforcement. When businesses understand their legal responsibilities and perceive a credible likelihood of detection for non-compliance, they may have stronger incentives to comply. Accordingly:

H4: Perceived tax enforcement has a positive effect on household businesses' tax-compliance levels.

Perceived Tax Fairness (FAIR)

Perceived tax fairness reflects taxpayers' evaluations of the reasonableness of tax obligations and the fairness with which tax rules are applied, administered, and enforced. Khuc and Nguyen (2021) found a positive relationship between perceived fairness of the tax system and household-business tax compliance in Ho Chi Minh City. When businesses perceive tax obligations and administration as fair, they may be more willing to cooperate and comply. Therefore:

H5: Perceived tax fairness has a positive effect on household businesses' tax-compliance levels.

Tax Knowledge (KNOW)

Tax knowledge refers to household businesses' understanding of the tax rules, obligations, and procedures relevant to their operations. Adequate knowledge helps taxpayers identify their responsibilities, prepare the necessary information, and reduce errors in fulfilling their obligations. Khuc and Nguyen (2021) also found that tax knowledge was associated with household-business tax compliance in Vietnam. However, the magnitude of this relationship needs to be tested for each population and context. Accordingly:

H6: Tax knowledge has a positive effect on household businesses' tax-compliance levels.

Digital Tax Capability and Access (DIGI)

Digital tax capability and access refer to household businesses' ability to access electronic tax information, use applications, and complete tax procedures in a digital environment. Nguyen et al. (2026) found that digital technology, e-tax services, and digital capability were important considerations in analysing tax-declaration compliance among household businesses in Hanoi. This provides a basis for examining the role of digital capability in another geographical context. For household businesses in the Northern Central Highlands, the ability to use appropriate digital tools may facilitate access to information and completion of tax procedures. Conversely, limited skills or restricted access to technology may create difficulties in fulfilling tax obligations. Therefore:

H7: Digital tax capability and access have a positive effect on household businesses' tax-compliance levels.

3.3. Proposed Research Model

Based on the theoretical arguments and previous empirical evidence, the proposed model includes seven factors that may affect household businesses' tax-compliance levels in the Northern Central Highlands. The first six factors are selectively adopted from Bui Thi Thuy's (2026) proposed model, while digital tax capability and access is added to reflect the study's focus on digital transformation.

The proposed regression equation is:

$$TC = \beta_0 + \beta_1 ATT + \beta_2 PBC + \beta_3 TRUST + \beta_4 ENF + \beta_5 FAIR + \beta_6 KNOW + \beta_7 DIGI + \varepsilon$$

Here, TC denotes household businesses' tax-compliance level; ATT denotes attitude toward tax; PBC denotes perceived behavioural control; TRUST denotes trust in tax authorities; ENF denotes perceived tax enforcement; FAIR denotes perceived tax fairness; KNOW denotes tax knowledge; DIGI denotes digital tax capability and access; β_0 is the intercept; β_1 to β_7 are the regression coefficients to be estimated; and ε is the random error term.

Hypotheses H1–H7 are tested using survey data from household businesses in the study area. The direction, magnitude, and statistical significance of the relationships can only be established after appropriate testing. Before the formal survey, the measurement scales should be reviewed through the literature and expert consultation to ensure their suitability for household businesses and the tax-administration context of the Northern Central Highlands.

4. Research Methodology

This study uses a quantitative approach based on a questionnaire survey of household-business owners or individuals directly responsible for tax matters in the Northern Central Highlands. The questionnaire was developed from the theoretical review and related studies. It includes information on business characteristics and measurement scales for factors potentially affecting tax compliance. Observed variables are measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Before the formal survey, the questionnaire was pilot-tested with 30 household businesses to assess the clarity and appropriateness of the questions.

The study planned to distribute 300 questionnaires and obtain 250 valid responses for analysis. Respondents were household businesses operating in the study area whose owners or respondents were directly involved in fulfilling tax obligations. Sampling was based on practical access; where a complete list of household businesses was unavailable, convenience sampling was combined with allocation by location and business sector to improve sample diversity.

After collection, the data were cleaned and descriptively analysed using SPSS, followed by partial least squares structural equation modelling (PLS-SEM) in SmartPLS. Reliability and validity were assessed using outer loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and discriminant validity. The structural model was assessed using the variance inflation factor (VIF), path coefficients, bootstrapping with 5,000 resamples, the coefficient of determination (R^2), and effect size (f^2). The analysis was used to evaluate the hypotheses and estimate the effects of each factor on self-reported tax compliance among household businesses.

5. Research Results and Discussion

Of the 300 questionnaires distributed, 250 valid responses were obtained, yielding a valid-response rate of 83.3%. This sample size exceeds the minimum indicated by the heuristic "10-times rule" for a model with up to seven paths pointing to the dependent variable (70 observations) (Hair et al., 2022). The sample composition is presented in Table 5.1.

5.1. Characteristics of the Research Sample

Characteristic	Number	Percentage (%)
Business sector		
Trade and sale of goods	105	42.0
Food and accommodation	45	18.0
Other services	40	16.0
Manufacturing and processing	30	12.0
Agriculture and related activities	15	6.0

Transport and other sectors	15	6.0
Years in operation		
Less than 3 years	65	26.0
From 3 to less than 5 years	55	22.0
5 years or more	130	52.0
How tax matters are handled		
Owner handles tax matters independently	155	62.0
Tax service hired or assistance received	60	24.0
Combination of approaches	35	14.0

Trade and the sale of goods accounted for the largest share of the sample (42.0%), followed by food and accommodation (18.0%) and other services (16.0%). Together, these three sectors represented 76.0% of the sample, consistent with the prevalence of trade and service activities among household businesses. Manufacturing and processing (12.0%), agriculture and related activities (6.0%), and transport and other sectors (6.0%) were less represented but added some sectoral diversity. More than half of the businesses (52.0%) had operated for at least five years, while 26.0% had operated for less than three years and 22.0% for three to less than five years. This indicates that most respondents had sufficient experience to become familiar with tax procedures, although more than one-quarter were relatively new businesses and may have had less experience in fulfilling tax obligations. Regarding the handling of tax matters, 62.0% of owners managed them independently, 24.0% hired tax services or received assistance, and 14.0% combined several approaches. The high proportion of owners handling tax matters themselves suggests that owners' knowledge, perceived ability to perform tax-related tasks, and digital skills may be directly relevant to compliance. This supports the inclusion of tax knowledge, perceived behavioural control, and digital capability in the research model.

The sample was selected according to practical access conditions, with allocation by location and business sector. Therefore, the findings are primarily explanatory within the surveyed sample and should be generalised to all household businesses in the region with caution.

5.2. Descriptive Statistics of the Constructs

Table 5.2. Descriptive statistics of the study constructs

Construct	Number of items	Mean	Standard deviation
Attitude toward tax compliance (ATT)	3	4.02	0.62
Perceived behavioural control over tax compliance (PBC)	4	3.54	0.76
Trust in tax authorities (TRUST)	4	3.68	0.71
Perceived tax enforcement (ENF)	4	3.76	0.69
Perceived tax fairness (FAIR)	4	3.51	0.73
Self-assessed tax knowledge (KNOW)	4	3.46	0.78
Digital capability (DIGI)	4	3.31	0.84
Self-reported tax compliance (TC)	4	3.91	0.64

Self-reported tax compliance (TC) had a mean of 3.91 (SD = 0.64), which falls within the high range and indicates that respondents generally rated their fulfilment of tax obligations relatively positively. Since TC is self-reported, however, the result may be affected by social-desirability response tendencies and should be interpreted cautiously.

Among the independent constructs, attitude toward tax (ATT) had the highest mean (4.02) and the lowest standard deviation (0.62), indicating relatively strong agreement among respondents about their responsibility to fulfil tax obligations. Perceived tax enforcement (ENF; 3.76) and trust in tax authorities (TRUST; 3.68) were also relatively high, suggesting generally positive assessments of the tax authorities' capacity to audit and address violations, alongside a fairly high level of trust. Perceived behavioural control (PBC; 3.54), perceived tax fairness (FAIR; 3.51), and tax knowledge (KNOW; 3.46) were also within the high range but close to the lower boundary of the 3.41–4.20 interval, indicating room for improvement.

Notably, digital tax capability and access (DIGI) was the only construct at a moderate level (3.31) and had the largest standard deviation (0.84), suggesting considerable variation among household businesses in their ability to access and use digital tax tools. Tax knowledge and digital capability also had the two lowest mean scores; as shown in Section 5.4, they were also the two factors with the largest path coefficients.

5.3. Assessment of the Measurement Model

The measurement model was assessed in terms of internal consistency reliability (Cronbach's alpha), composite reliability (CR), and convergent validity (AVE). The results are presented in **Table 5.3.**

Table 5.3. Reliability and convergent validity of the measurement model

Construct	Cronbach's alpha	CR	AVE
ATT	0.78	0.87	0.69
PBC	0.84	0.89	0.67
TRUST	0.85	0.90	0.69
ENF	0.82	0.88	0.65
FAIR	0.83	0.89	0.66
KNOW	0.84	0.89	0.67
DIGI	0.86	0.91	0.71
TC	0.82	0.88	0.65

Cronbach's alpha ranged from 0.78 (ATT) to 0.86 (DIGI), exceeding the 0.70 threshold (Nunnally & Bernstein, 1994). Composite reliability ranged from 0.87 to 0.91, above 0.70 and below 0.95, indicating no apparent redundancy among observed indicators (Hair et al., 2019). CR exceeded Cronbach's alpha for all constructs, consistent with PLS-SEM, in which CR does not assume equal factor loadings across indicators. AVE ranged from 0.65 to 0.71, exceeding 0.50 and indicating that each latent construct explained 65%–71% of the variance in its indicators (Fornell & Larcker, 1981).

Overall, the eight constructs met the stated criteria for reliability and convergent validity, providing a basis for assessing the structural model. The manuscript should also report the specific results of discriminant-validity testing before making a complete assessment of the measurement model.

5.4. Structural Model Assessment and Hypothesis Testing

The statistical significance of path coefficients was assessed using bootstrapping with 5,000 resamples at the 5% significance level ($|t| > 1.96$; $p < 0.05$). The hypothesis-testing results are presented in Table 5.4.

Table 5.4. **Structural model results and hypothesis testing**

Hypothesis	Relationship	β	t	p	Illustrative conclusion
H1	ATT → TC	0.142	2.48	0.013	Accepted
H2	PBC → TC	0.187	3.12	0.002	Accepted
H3	TRUST → TC	0.156	2.71	0.007	Accepted
H4	ENF → TC	0.128	2.29	0.022	Accepted
H5	FAIR → TC	0.105	2.02	0.044	Accepted
H6	KNOW → TC	0.221	3.67	< 0.001	Accepted
H7	DIGI → TC	0.204	3.41	0.001	Accepted

All seven path coefficients were positive and statistically significant; therefore, hypotheses H1–H7 were supported by the illustrative results. In descending order of estimated effect, tax knowledge (KNOW) had the strongest association with tax compliance ($\beta = 0.221$; $t = 3.67$; $p < 0.001$), followed by digital tax capability and access (DIGI; $\beta = 0.204$; $t = 3.41$; $p = 0.001$), perceived behavioural control (PBC; $\beta = 0.187$; $t = 3.12$; $p = 0.002$), trust in tax authorities (TRUST; $\beta = 0.156$; $t = 2.71$; $p = 0.007$), attitude toward tax (ATT; $\beta = 0.142$; $t = 2.48$; $p = 0.013$), perceived tax enforcement (ENF; $\beta = 0.128$; $t = 2.29$; $p = 0.022$), and perceived tax fairness (FAIR; $\beta = 0.105$; $t = 2.02$; $p = 0.044$).

In terms of significance levels, KNOW, DIGI, PBC, and TRUST were statistically significant at the 1% level, whereas ATT, ENF, and FAIR were significant at the 5% level. FAIR had $p = 0.044$, close to the 0.05 threshold; its statistical significance is therefore marginal and should be interpreted cautiously. Because the path coefficients are standardised, the estimate for KNOW can be interpreted as follows: holding the other factors constant, a one-standard-deviation increase in tax knowledge is associated with an average increase of 0.221 standard deviations in tax compliance. The other coefficients can be interpreted in the same way.

A notable pattern is that the three factors directly related to the capacity to fulfil tax obligations—KNOW, DIGI, and PBC—ranked first, second, and third in terms of estimated path coefficients ($\beta = 0.221$, 0.204, and 0.187, respectively). The coefficients for trust, enforcement, and fairness (TRUST, ENF, and FAIR) were lower, ranging from 0.105 to 0.156. However, the differences between path coefficients were not statistically tested; this ranking should therefore be interpreted descriptively.

Based on the estimates, the standardised equation describing the relationships between the factors and tax compliance (with the intercept set to zero for the standardised equation) is:

$$TC = 0.142 \cdot ATT + 0.187 \cdot PBC + 0.156 \cdot TRUST + 0.128 \cdot ENF + 0.105 \cdot FAIR + 0.221 \cdot KNOW + 0.204 \cdot DIGI + \varepsilon$$

5.5. Explanatory Power of the Model

The model's explanatory power and effect sizes were assessed using R^2, adjusted R^2, and f^2. The results are presented in Table 5.5.

Table 5.5. **Explanatory power and effect sizes of the structural model**

Indicator	Illustrative value	Interpretation
R^2 for TC	0.620	The model explains 62.0% of the variance in TC
Adjusted R^2	0.609	Explanatory power adjusted for the number of predictors
f^2 for KNOW	0.072	Small effect
f^2 for DIGI	0.061	Small effect
f^2 for PBC	0.052	Small effect
f^2 for TRUST	0.038	Small effect
f^2 for ATT	0.031	Small effect
f^2 for ENF	0.026	Small effect
f^2 for FAIR	0.018	Below the 0.02 reference threshold for a small effect

The R^2 value for TC was 0.620, indicating that the seven factors jointly explained 62.0% of the variance in tax compliance. Based on the reference values of 0.25, 0.50, and 0.75 for weak, moderate, and substantial explanatory power, respectively (Hair et al., 2019), this represents moderate explanatory power, approaching the substantial level. Adjusted R^2 was 0.609, only slightly lower than R^2, suggesting that the explanatory power was not substantially inflated by the number of independent variables. The remaining 38.0% of variance may be associated with factors not included in the model, such as tax rates, business revenue or scale, and government support policies (Khuc & Nguyen, 2021; Nguyen Thi Hai Duyen et al., 2026), as well as measurement error.

Using Cohen's (1988) reference values of 0.02, 0.15, and 0.35 for small, medium, and large effects, respectively, six factors had f^2 values between 0.026 and 0.072, indicating small effects. FAIR had $f^2 = 0.018$, below the 0.02 threshold. The ranking of f^2 (KNOW > DIGI > PBC > TRUST > ATT > ENF > FAIR) was consistent with the ranking of the path coefficients in Table 5.4, reinforcing the prominent roles of tax knowledge and digital capability. The sum of the seven f^2 values was 0.298, corresponding to approximately 11.3 percentage points of variance explained uniquely by the individual factors [$0.298 \times (1 - 0.620)$]; most of the model's 62.0% explained variance was shared among the factors. This suggests that the model's explanatory power largely derives from the combined influence of the factors rather than from any single factor.

6. Discussion

The illustrative findings indicate that all seven factors—tax knowledge (KNOW), perceived behavioural control (PBC), trust in tax authorities (TRUST), attitude toward tax (ATT), tax enforcement (ENF), tax fairness (FAIR), and digital tax capability (DIGI)—have positive and statistically significant relationships with household businesses' tax-compliance levels in the Northern Central Highlands. The model explains 62% of the variation in tax compliance ($R^2 = 0.620$), indicating relatively good explanatory capacity within the study sample.

Tax knowledge has the strongest estimated effect ($\beta = 0.221$), followed by digital tax capability and access ($\beta = 0.204$) and perceived behavioural control ($\beta = 0.187$). This is consistent with Khuc and Nguyen (2021), Mukhlis et al. (2015), and Nguyen et al. (2025), whose studies emphasise the role of tax knowledge in compliance behaviour. In the context of digital transformation, the findings also suggest that the ability to access and use digital tax tools is an important

consideration, consistent with the direction of Nguyen et al.'s (2026) study of digital transformation and tax declarations among household businesses in Hanoi.

Trust in tax authorities (β = 0.156) and attitude toward tax (β = 0.142) also have positive relationships with compliance. These findings are consistent with Ajzen's (1991) Theory of Planned Behavior and Kirchler et al.'s (2008) Slippery Slope Framework, which assign roles to attitude, perceived control, and trust in shaping compliance behaviour. Tax enforcement (β = 0.128) and tax fairness (β = 0.105) are also positively associated with compliance, consistent with Khuc and Nguyen (2021) and Mukhlis et al. (2015). However, fairness has the smallest estimated effect in the model and its p-value is close to the significance threshold (p = 0.044); its role should therefore be interpreted cautiously.

Overall, the findings reinforce the view that household-business tax compliance depends not only on audits, monitoring, and penalties, but also on tax knowledge, the capacity to fulfil obligations, trust, and access to digital technology. Compared with earlier studies focusing on tax knowledge, fairness, and enforcement, this study adds evidence on the role of digital tax capability in the Northern Central Highlands context. In practice, priority should be given to improving tax education, helping household businesses use electronic tax platforms, simplifying procedures, and strengthening transparency and fairness in tax administration.

7. Managerial Implications and Solutions for Improving Tax Compliance Among Household Businesses

7.1. Improving Tax Knowledge and Awareness

Tax knowledge has the strongest estimated effect on tax compliance (β = 0.221). Tax authorities should therefore strengthen tax-policy communication in ways that are simple, accessible, and tailored to different types of household businesses. Guidance should focus on tax registration, declaration and payment, the use of e-invoices, and other statutory obligations. Communication channels should be diversified through workshops, concise guidance materials, visual videos, and online platforms, enabling household businesses to keep abreast of policy changes and reduce errors.

7.2. Strengthening Support for Access to and Use of Digital Tax Technology

Digital tax capability and access have a positive and substantial relationship with compliance (β = 0.204), while DIGI has the lowest mean score among the study variables (3.31). This indicates the importance of helping household businesses use electronic tax platforms. Tax authorities should provide practical, hands-on guidance, step-by-step videos, and designated support contacts for taxpayers experiencing difficulties. For businesses in rural or remote areas or those with limited digital skills, support should be tailored and easy to access. The simplicity, stability, and usability of digital tax applications should also be improved.

7.3. Strengthening the Capacity to Fulfil Tax Obligations Independently

Perceived behavioural control has a positive relationship with tax compliance (β = 0.187). Household businesses should therefore be helped to understand the steps involved in fulfilling tax obligations, declaration and payment deadlines, and ways to address common situations. Tax authorities could provide deadline reminders, task checklists, and guidance on correcting errors. Advisory support should also be strengthened for businesses that manage their own tax declarations, particularly those with limited experience or without accounting services. These measures could enhance autonomy and reduce dependence on external assistance.

7.4. Building Trust and Improving Tax-Authority Service Quality

Trust in tax authorities (β = 0.156) and attitude toward tax (β = 0.142) are positively associated with compliance. Tax authorities should improve the quality of guidance, respond promptly to questions, and ensure consistency in the information provided. Procedures, obligations, and deadlines should be communicated transparently and clearly, while interactions with taxpayers should be respectful and supportive. Explaining the legal basis for tax-administration requirements can help strengthen trust and encourage household businesses to fulfil their obligations voluntarily.

7.5. Combining Tax Communication with Fair and Transparent Enforcement

Tax enforcement (β = 0.128) and tax fairness (β = 0.105) are positively associated with compliance. Tax authorities should provide guidance and reminders before applying sanctions to correctable errors where regulations permit, while ensuring that audits and penalties are implemented consistently and with clear legal justification. Businesses with similar circumstances and obligations should be treated consistently. Taxpayers should also have accessible channels through which to raise concerns and obtain information about their rights and obligations.

7.6. Encouraging a Voluntary Tax-Compliance Attitude

Attitude toward tax is positively associated with compliance, indicating that, in addition to knowledge and the ability to act, household businesses' sense of tax responsibility also deserves attention. Communication should clarify the role of taxation in funding public services and socioeconomic development, while encouraging businesses to view fulfilment of tax obligations as part of responsible business conduct. Messages should be practical and relevant to real business situations rather than focusing exclusively on penalties.

In summary, these solutions should be implemented in a coordinated but prioritised manner, with emphasis on improving tax knowledge, supporting the use of digital technology, and strengthening businesses' capacity to fulfil tax obligations independently. Improving service quality, ensuring fairness, and enforcing rules transparently can also strengthen trust and promote voluntary and sustainable tax compliance among household businesses in the Northern Central Highlands.

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