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RESEARCH ARTICLE

Financial literacy and tax management among market traders in northern Peru: the moderating role of business formalisation

[version 1; peer review: awaiting peer review]

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Abstract

Background

In Peru, 41% of adults do not reach a minimum level of financial literacy, and informal employment exceeds 86% in Cajamarca and Amazonas. Little is known about whether market traders' financial knowledge shows in how they handle their taxes, or about the conditions that change this relationship. This study estimated it in two markets in northern Peru, with accounting digitalisation, business formalisation and digital financial transformation as moderators.

Methods

Quantitative, observational, cross-sectional study with a non-probability sample of 218 traders from the markets of Chota (n = 109) and Bagua Grande (n = 109) in 2026. A 36-item Likert questionnaire, validated by expert judgement, was used, with Cronbach's alpha between 0.927 and 0.977. Twenty-one linear regressions with interaction terms and centred predictors were estimated, with HC3 standard errors and bootstrap intervals from 5000 resamples for each interaction.

Results

Low financial literacy was found in 28.0% of traders and low tax management in 33.5%. Financial literacy had a positive partial effect on tax management (b between 0.446 and 0.519, $p < 0.001$), and only

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business formalisation moderated this effect (b = 0.053, 95% CI 0.008 to 0.096). The three dimensions of financial literacy were associated with tax management without moderation, and formalisation strengthened the effect on digital tax compliance (b = 0.071, 95% CI 0.011 to 0.130), which held without influential cases.

Conclusions

Financial literacy goes hand in hand with better tax management, above all in formalised businesses. Common method bias and the closeness between constructs mean these coefficients should be confirmed with data from other sources, such as tax administration records.

Keywords
financial literacy, tax management, tax compliance, business formalisation, informal economy, retail trade, moderation analysis, Peru

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Introduction

Financial literacy and tax compliance are two sides of the same problem in economies with high informality. In the countries that took part in the latest OECD international survey, only 58% of adults reached the minimum score in financial knowledge, the figure fell to 52% in financial behaviour, and the worst results were concentrated among those with less education and lower income (Organisation for Economic Co-operation and Development [OECD], 2023). In Latin America, tax non-compliance reached USD 433 billion in 2023, 6.7% of gross domestic product, mainly through income tax evasion and avoidance (Economic Commission for Latin America and the Caribbean [ECLAC], 2024).

Peru combines both problems. Some 41% of adults did not reach a minimum level of financial literacy and only 21% could solve a simple interest calculation (Superintendencia de Banca, Seguros y AFP [SBS], 2023), while the country had the highest rate of labour informality among eleven countries in the region (International Labour Organization [ILO], 2025). In the north, informal employment reached 89.5% in Cajamarca and 86.7% in Amazonas, above the national 74% (Instituto Nacional de Estadística e Informática [INEI], 2023), and in Cajamarca half of higher education students showed a low financial culture (Tarrillo, Risco, et al., 2025b).

In the food markets of Chota, capital of the province of the same name in Cajamarca, and of Bagua Grande, capital of the province of Utcubamba in Amazonas, work 218 traders who largely run their businesses empirically and meet their tax obligations irregularly. If this situation continues, informality is likely to persist and their businesses to grow little.

This study focuses on these traders' financial literacy, understood as the way they manage their money, make decisions and use digital means, and on their tax management, with accounting digitalisation, business formalisation and digital financial transformation as possible moderators. Its purpose was to describe the level of both variables and to estimate whether financial literacy is associated with tax management and under which conditions that relationship becomes stronger.

Theoretical framework

Two theories support the model. Human capital theory treats knowledge as an investment that improves the economic performance of whoever acquires it (Becker, 1964), and financial literacy has been described as a scarce human capital that guides entrepreneurs' decisions (Xu & Jiang, 2024). The theory of planned behaviour holds that conduct depends on intention, and intention on attitude, subjective norm and perceived control (Ajzen, 1991), and in Jordanian SMEs these three factors explained the intention to pay sales tax (Bani-Khalid et al., 2022). From both, the trader who knows more about finance would have more control over their obligations and would manage them better, and this effect would be greater when their environment, whether the formalisation of the business or its degree of digitalisation, gives them more chances to apply what they know.

Several studies have linked what taxpayers know with how they comply. In Ghana, tax knowledge was the strongest predictor of the committed compliance of 400 self-employed workers ($\beta = 0.370$), even after controlling for business characteristics (Trawule et al., 2022). In Ecuador, almost half of the micro-entrepreneurs in a coastal commune did not know enough to control their finances or to comply with the tax authority (Buste-Cedeño & González-Ordóñez, 2026), and in Chimborazo those who knew more about finance kept better accounts and paid their taxes more regularly (Nieto et al., 2024). Among traders in popular markets, financial planning was strongly associated with the level of indebtedness (Solano & Cabrera, 2024).

In Peru the evidence has focused on tax culture. In markets in Lima, Callao, Puerto Maldonado and Ilo, tax culture or tax formality was associated with compliance, with Spearman coefficients between 0.590 and 0.968 (Cáceres et al., 2025; Chávez-Inga et al., 2025; Hurtado et al., 2023; Sucapuca, 2024), although in the Santa Anita market only 30.3% of traders reported complying regularly (Chávez-Inga et al., 2025). In Lambayeque, 79.2% of micro and small grocery businesses had low tax education and tax culture was associated with their formalisation (Tarrillo, Pintado, et al., 2025a). A structured training programme, for its part, raised the share of teachers with high financial literacy from 12% to 56% (Sandoval et al., 2023), so this capacity can be improved through intervention.

These studies leave two gaps. Almost all of them measure tax culture or tax knowledge, and few examine whether the trader's general financial literacy, that is, how they manage their money, how they decide and how they use digital means, shows in the handling of their taxes. They also analyse relationships between two variables with correlations, without asking under which conditions the relationship becomes stronger. The digitalisation of accounting (Mina et al., 2025), the formalisation of the business (Aguado et al., 2025) and the use of digital financial services (Hernández et al., 2022) change the environment in which traders meet their obligations, and could strengthen or weaken the passage from knowledge to tax practice. The novelty of this study lies in examining the trader's general financial literacy, and not only their tax knowledge, and in testing three moderators that belong to the business environment in provincial markets.

Three hypotheses were therefore proposed. According to the first (H1), financial literacy has a positive partial effect on tax management and this effect varies with each moderator. According to the second (H2), the same holds for each dimension of financial literacy, namely business financial management, digital financial behaviour and financial decision-making. According to the third (H3), financial literacy has a positive partial effect on each dimension of tax management, namely digital tax compliance, tax accounting organisation and strategic tax planning, and this effect also varies with each moderator.

Methods

A quantitative, observational, cross-sectional study was carried out and is reported following the STROBE guideline for cross-sectional studies (von Elm et al., 2007). The work took place in the Mercado Central of Chota, capital of the province of the same name in Cajamarca, and in the Parada Municipal of Bagua Grande, capital of the province of Utcubamba in Amazonas, two cities in northern Peru with high levels of informal employment. Both markets were chosen purposively because they are the main food markets of each city, in two departments with informal employment above the national average. Data were collected between 28 September and 1 October 2026.

In each market, 109 traders who were at their stall during data collection and agreed to take part were surveyed, out of 497 stalls registered in the Parada Municipal of Bagua Grande and 283 traders listed in the register of the Mercado Central of Chota, 202 on the first floor and 81 on the second, so the sample was non-probabilistic. Traders aged 18 years or older who were working in the market while the questionnaire was being applied and signed the consent form were included, and those who declined or were not at their stall were excluded.

The questionnaire was applied through a Google Forms form. Before answering, each trader received an explanation of the study and signed the informed consent form. No names or identity document numbers were recorded.

A 36-item questionnaire developed by the authors was used, with a five-point scale from never (1) to always (5). Financial literacy was measured with 12 items in three dimensions of four items, taken from the framework the OECD uses to measure financial literacy, which includes a digital component (OECD, 2023). Business financial management covered the control of income and expenses, financial planning and the organisation of resources. Digital financial behaviour covered the use of digital banking, e-wallets and digital platforms to keep track of money. Financial decision-making included comparing alternatives, saving and the responsible management of money.

Tax management was also measured with 12 items in three dimensions, defined from the formal obligations of the taxpayer set by the Peruvian Tax Code (Superintendencia Nacional de Aduanas y de Administración Tributaria [SUNAT], 2023) and from the shift of these obligations to the electronic channel (Legislative Decree No. 1523, 2022). Digital tax compliance covered online tax returns, timely payment and the use of electronic receipts. Tax accounting organisation covered the recording of transactions, the order of documents and the control of financial information. Strategic tax planning included anticipating obligations and contingencies within the legal framework. The three moderators were measured with four items each, accounting digitalisation with items 25 to 28, business formalisation with items 29 to 32, among them the registration of the business with SUNAT, and digital financial transformation with items 33 to 36. The full questionnaire is available as extended data.

Content validity was assessed by three experts, who rated the clarity, relevance and coherence of each item. Reliability, estimated with the 218 cases, was high, with Cronbach's alpha of 0.967 for financial literacy, 0.977 for tax management, 0.936 for accounting digitalisation, 0.948 for business formalisation and 0.927 for digital financial transformation, and from 0.924 to 0.945 in the six dimensions.

Low, medium and high levels were assigned with three equal-width intervals on the sum of the items, from 12 to 28, from 29 to 44 and from 45 to 60 for each variable, and from 4 to 9, from 10 to 14 and from 15 to 20 for each dimension. For the hypotheses, 21 linear regressions with an interaction term were estimated, three for H1, nine for H2 and nine for H3, one for each combination of predictor, dependent variable and moderator. Each model, equivalent to PROCESS model 1 (Hayes, 2022), took the form $Y = b_0 + b_1X + b_2W + b_3XW$, where X is the predictor, W the moderator and XW their product. The predictor and the moderator were expressed as means from 1 to 5 and centred on their mean before forming the product, so that b_1 is the partial effect of the predictor at the mean value of the moderator and b_3 shows how much that effect changes for each point of the moderator.

Standard errors were estimated with the heteroscedasticity-robust HC3 estimator (Zeileis et al., 2020), and p values with the t distribution on the residual degrees of freedom. For each interaction a 95% percentile bootstrap confidence interval with 5000 resamples was also computed. Robustness was assessed by re-estimating the models without influential cases according to Cook's distance, with a cut-off of 4/n. Residual normality (Shapiro-Wilk), heteroscedasticity (Breusch-

Pagan), linear specification (Ramsey's RESET), autocorrelation (Durbin-Watson) and collinearity (variance inflation factor) were checked with the lmtest package (Zeileis & Hothorn, 2002). Since all measures came from the same questionnaire, common method bias was examined with Harman's single-factor test (Podsakoff et al., 2003) and discriminant validity with the HTMT index (Henseler et al., 2015). The analysis was run in R, version 4.5, through RStudio, with a significance level of 0.05.

Results and discussion

All 218 questionnaires were analysed. All had answers to the 36 items and none marked the same option on every item, so no case was excluded or imputed. The questionnaire did not include sociodemographic questions, so the age, sex, schooling and business size of the participants are not available.

Levels of financial literacy and tax management

Table 1 shows that in financial literacy the high and medium levels had almost equal shares, 36.2% and 35.8%, while 28.0% of traders were at the low level. The high level predominated in all three dimensions, reaching 43.1% in digital financial behaviour. Tax management was split between the high (37.2%), low (33.5%) and medium (29.4%) levels, so one in three traders was at the low level, and in its dimensions the low level ranged from 30.7% to 33.0%.

As for the levels, the 28.0% of traders with low financial literacy is far from the 49% found in a rural commune in Ecuador (Buste-Cedeño & González-Ordóñez, 2026), a gap that may reflect that Chota and Bagua Grande are provincial capitals with more access to financial institutions and digital means. Tax management showed a more polarised distribution, with a third of traders at the low level, a share close to the 30.3% of regular compliance recorded in Santa Anita (Chávez-Inga et al., 2025). This third is the group that support actions should reach first.

Financial literacy and tax management (H1)

The partial effect of financial literacy on tax management was positive and significant with all three moderators, with coefficients of 0.519 with accounting digitalisation, 0.446 with business formalisation and 0.493 with digital financial transformation ($p < 0.001$ in all three cases, Table 2). The interaction was significant only with business formalisation ($b = 0.053$, $p = 0.023$), with a bootstrap interval that did not include zero (0.008 to 0.096), which indicates that the effect of

Table 1. Levels of financial literacy, tax management and their dimensions.

Variable or dimension	Low f (%)	Medium f (%)	High f (%)	M (SD)
Financial literacy	61 (28.0)	78 (35.8)	79 (36.2)	38.15 (13.72)
Business financial management	65 (29.8)	73 (33.5)	80 (36.7)	12.64 (4.80)
Digital financial behaviour	62 (28.4)	62 (28.4)	94 (43.1)	12.87 (4.91)
Financial decision-making	63 (28.9)	69 (31.7)	86 (39.4)	12.65 (4.85)
Tax management	73 (33.5)	64 (29.4)	81 (37.2)	37.08 (14.52)
Digital tax compliance	72 (33.0)	69 (31.7)	77 (35.3)	12.26 (5.12)
Tax accounting organisation	71 (32.6)	63 (28.9)	84 (38.5)	12.56 (4.98)
Strategic tax planning	67 (30.7)	66 (30.3)	85 (39.0)	12.27 (4.92)

Note: N = 218. Scores as the sum of items. Levels by equal-width intervals: variables, low 12–28, medium 29–44 and high 45–60. Dimensions, low 4–9, medium 10–14 and high 15–20.

Table 2. Effect of financial literacy on tax management with each moderator.

Moderator	Financial literacy b (p)	Moderator b (p)	Interaction b (SE)	p	95% bootstrap CI	R^2
Accounting digitalisation	0.519 (<0.001)	0.469 (<0.001)	0.007 (0.021)	0.737	−0.033 to 0.046	0.860
Business formalisation	0.446 (<0.001)	0.534 (<0.001)	0.053 (0.023)	0.023	0.008 to 0.096	0.892
Digital financial transformation	0.493 (<0.001)	0.475 (<0.001)	0.027 (0.030)	0.376	−0.035 to 0.080	0.845

Note: N = 218. Dependent variable: tax management. b = unstandardised coefficient. SE = HC3 standard error. Predictor and moderator mean-centred. Percentile bootstrap CI with 5000 resamples.

financial literacy grows as the business becomes more formalised. With accounting digitalisation (p = 0.737) and digital financial transformation (p = 0.376) the interaction was not significant. The three moderators also had positive partial effects (b between 0.469 and 0.534, p < 0.001), and the models explained between 84.5% and 89.2% of the variance in tax management.

Among traders in two markets in northern Peru, financial literacy was associated with better tax management with any of the three moderators in the model, and only business formalisation changed the strength of this relationship. That financial knowledge shows in the handling of taxes is consistent with human capital theory (Becker, 1964; Xu & Jiang, 2024) and with the findings from Ghana, where tax knowledge was the strongest predictor of compliance (Trawule et al., 2022). Previous Peruvian studies stopped at correlations between tax culture and compliance (Cáceres et al., 2025; Hurtado et al., 2023), and this work adds an estimate of the partial effect with each moderator in the model and a test of the conditions under which that effect becomes stronger.

The moderation by formalisation was small, though stable. With a coefficient of 0.053, the effect of financial literacy on tax management rises by just over five hundredths for each point of formalisation, and the result held after removing influential cases. One possible explanation comes from Ajzen's (1991) perceived control. A trader registered with SUNAT is required to file returns and issue receipts, and this obligation gives them more chances to use what they know about finance. Previous studies treated formalisation as an outcome or as a variable associated with tax culture (Chávez-Inga et al., 2025; Sucapuca, 2024; Tarrillo, Pintado, et al., 2025a), whereas here it appears as the condition under which financial knowledge pays off more. The firmest effect was the one on digital tax compliance, which also withstood the removal of influential cases, while the one on strategic tax planning did not and should be taken as preliminary.

Accounting digitalisation and digital financial transformation were directly associated with tax management, with coefficients of 0.469 and 0.475, but did not moderate the effect of financial literacy. They may work as resources that add to knowledge rather than as conditions that activate it. The closeness between these constructs, with HTMT values of 0.90 or more in several pairs, also makes it harder to separate their interactions.

Dimensions of financial literacy (H2)

All three dimensions of financial literacy had positive and significant partial effects with each moderator (p < 0.001, Table 3). The largest was that of financial decision-making (b between 0.335 and 0.433), followed by business financial management (b between 0.288 and 0.349) and digital financial behaviour (b between 0.228 and 0.297). None of the nine interactions was significant at 0.05. The closest to the threshold were digital financial behaviour with business

Table 3. Effect of the dimensions of financial literacy on tax management.

Moderator	Dimension b (p)	Moderator b (p)	Interaction b (SE)	p	95% bootstrap CI	R^2
Business financial management						
Accounting digitalisation	0.349 (<0.001)	0.601 (<0.001)	−0.034 (0.021)	0.107	−0.076 to 0.006	0.838
Business formalisation	0.288 (<0.001)	0.643 (<0.001)	0.017 (0.020)	0.404	−0.024 to 0.052	0.870
Digital financial transformation	0.317 (<0.001)	0.619 (<0.001)	0.000 (0.029)	0.994	−0.059 to 0.051	0.831
Digital financial behaviour						
Accounting digitalisation	0.297 (<0.001)	0.647 (<0.001)	0.015 (0.023)	0.497	−0.027 to 0.057	0.826
Business formalisation	0.294 (<0.001)	0.661 (<0.001)	0.039 (0.022)	0.075	−0.002 to 0.080	0.884
Digital financial transformation	0.228 (<0.001)	0.692 (<0.001)	0.020 (0.028)	0.487	−0.040 to 0.071	0.818
Financial decision-making						
Accounting digitalisation	0.433 (<0.001)	0.529 (<0.001)	−0.024 (0.020)	0.244	−0.062 to 0.015	0.860
Business formalisation	0.335 (<0.001)	0.594 (<0.001)	0.015 (0.020)	0.474	−0.025 to 0.054	0.874
Digital financial transformation	0.392 (<0.001)	0.544 (<0.001)	−0.001 (0.026)	0.974	−0.054 to 0.047	0.841

Note: N = 218. Dependent variable: tax management. b = unstandardised coefficient. SE = HC3 standard error. Percentile bootstrap CI with 5000 resamples.

formalisation (b = 0.039, p = 0.075, CI −0.002 to 0.080) and business financial management with accounting digitalisation (b = −0.034, p = 0.107).

Among the dimensions, financial decision-making carried the most weight, which agrees with Cáceres et al. (2025), for whom tax education was the dimension most linked to compliance, and with the OECD (2023) emphasis on behaviour over stated knowledge. None of the nine interactions in this group was significant. A likely explanation is that each dimension explains a smaller part of tax management, and the moderation visible with the full variable is diluted when it is split.

Dimensions of tax management (H3)

Financial literacy had positive and significant partial effects on all three dimensions of tax management with each moderator ($p < 0.001$, Table 4), with coefficients from 0.503 to 0.556 for digital tax compliance, from 0.437 to 0.583 for tax accounting organisation and from 0.398 to 0.432 for strategic tax planning. Business formalisation moderated the effect on digital tax compliance (b = 0.071, p = 0.019, CI 0.011 to 0.130) and on strategic tax planning (b = 0.057, p = 0.047, CI 0.001 to 0.111), and the other interactions were not significant (p between 0.204 and 0.978). Figure 1 brings together the 21 interaction coefficients with their intervals, and only the three for business formalisation mentioned above did not include zero.

Diagnostics and sensitivity

Residuals were not normally distributed in any model (Shapiro-Wilk, $p < 0.01$), the Breusch-Pagan test showed heteroscedasticity in 11 of the 21 ($p < 0.05$) and the RESET test indicated non-linearity in 8, six of them with a dimension of tax management as the dependent variable. The Durbin-Watson statistic ranged from 1.69 to 2.19 and no variance inflation factor exceeded 4.90. After removing influential cases, the interaction of financial literacy with business formalisation on tax management held (p = 0.025), as did the one on digital tax compliance (p = 0.027), while the one on strategic tax planning was no longer significant (p = 0.076). For the dimensions of financial literacy no interaction reached significance (p between 0.067 and 0.921). Without influential cases, the interaction of formalisation on tax accounting organisation (p = 0.032) and that of digital financial transformation on digital tax compliance (p = 0.008) became significant, and they are not interpreted as findings because they did not appear in the main estimation.

In Harman's test, the first factor explained 72.1% of the variance of the 36 items. The HTMT index was below 0.90 only between financial literacy and accounting digitalisation (0.884), between financial literacy and business formalisation

Table 4. Effect of financial literacy on the dimensions of tax management.

Moderator	Financial literacy b (p)	Moderator b (p)	Interaction b (SE)	p	95% bootstrap CI	R^2
Digital tax compliance						
Accounting digitalisation	0.556 (<0.001)	0.457 (<0.001)	0.016 (0.030)	0.596	−0.043 to 0.076	0.801
Business formalisation	0.503 (<0.001)	0.506 (<0.001)	0.071 (0.030)	0.019	0.011 to 0.130	0.825
Digital financial transformation	0.532 (<0.001)	0.464 (<0.001)	0.047 (0.037)	0.204	−0.028 to 0.111	0.791
Tax accounting organisation						
Accounting digitalisation	0.583 (<0.001)	0.410 (<0.001)	0.006 (0.025)	0.819	−0.043 to 0.053	0.815
Business formalisation	0.437 (<0.001)	0.548 (<0.001)	0.029 (0.029)	0.308	−0.030 to 0.083	0.862
Digital financial transformation	0.513 (<0.001)	0.461 (<0.001)	0.013 (0.032)	0.682	−0.052 to 0.072	0.812
Strategic tax planning						
Accounting digitalisation	0.419 (<0.001)	0.539 (<0.001)	−0.001 (0.024)	0.978	−0.049 to 0.045	0.796
Business formalisation	0.398 (<0.001)	0.548 (<0.001)	0.057 (0.029)	0.047	0.001 to 0.111	0.812
Digital financial transformation	0.432 (<0.001)	0.499 (<0.001)	0.020 (0.037)	0.587	−0.057 to 0.087	0.766

Note: N = 218. Dependent variables: the dimensions of tax management shown in each block. b = unstandardised coefficient. SE = HC3 standard error. Percentile bootstrap CI with 5000 resamples.

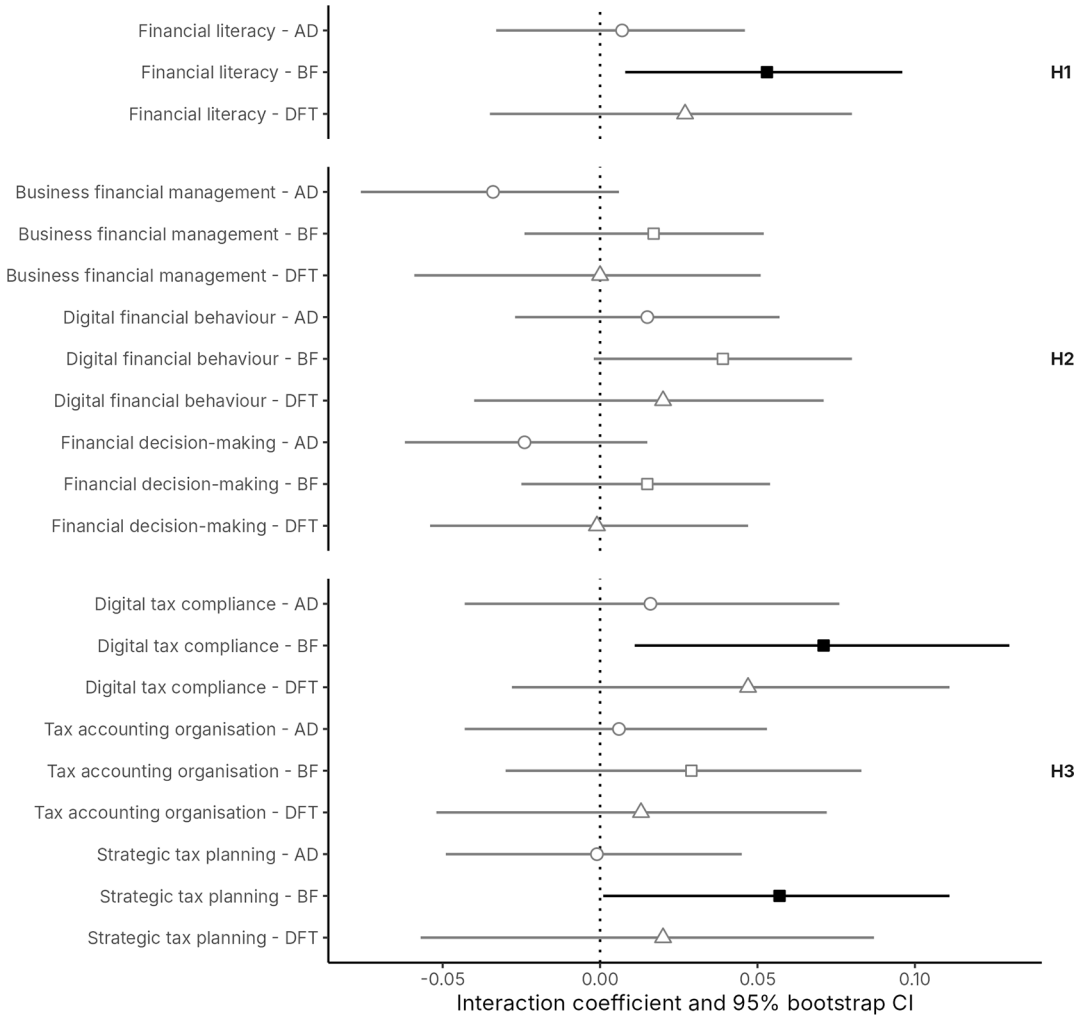


Figure 1. Interaction coefficients of the 21 models with their 95% bootstrap intervals. *Note:* Each marker is the interaction coefficient and each line its 95% bootstrap confidence interval with 5000 resamples. The dotted line marks zero. Intervals that do not include zero are shown in black with a filled marker. H1 to H3 = hypotheses. AD = accounting digitalisation. BF = business formalisation. DFT = digital financial transformation.

(0.882) and between accounting digitalisation and business formalisation (0.893), while the other seven pairs ranged from 0.916 to 0.953.

Ethical considerations

The project was reviewed by the Research Ethics Committee of the School of Accounting of Universidad César Vallejo, which issued a favourable opinion (Report No. 00954–2026/CEI-EC, dated 3 August 2026) before data collection began. Before answering, each trader received an explanation of the purpose of the study and signed an informed consent form, without any pressure and with the option to withdraw at any time. Only adults took part, so no minors were involved in the study. No names or identity document numbers were recorded, and the answers were kept confidential.

Conclusions

Among traders in the markets of Chota and Bagua Grande, financial literacy was associated with better tax management, and this relationship was stronger in more formalised businesses, above all for digital tax compliance. Accounting digitalisation and digital financial transformation went along with tax management on their own, but did not change the strength of that relationship. Given the risk of common method bias, these findings should be confirmed with measures that do not depend on self-report.

For municipalities and the tax administration, the results suggest that financial training for traders pays off more when it goes together with the formalisation of their businesses, so both should be offered in the same programme rather than separately. Financial decision-making appears to be the content with the most weight, and the third of traders with low tax management, the priority group.

The results have several limitations. The cross-sectional design and self-report measurement do not allow causal claims, and the coefficients should be read as partial effects conditional on the model. Because all variables came from the same questionnaire, the first Harman factor explained 72.1% of the variance and seven of the ten construct pairs exceeded the HTMT threshold of 0.90, so there is a risk of common method bias and of overlap between concepts, and the coefficients of determination, between 0.766 and 0.892, may be inflated. Part of this overlap comes from the instrument itself, since some moderator items come close to what tax management measures, such as issuing receipts or meeting required obligations, which appear in business formalisation. Residuals were not normal and in eight models the RESET test suggested non-linear relationships, which was partly offset by HC3 errors and bootstrap intervals, although other functional forms were not explored. The sample was non-probabilistic, since those surveyed were the traders at their stalls who agreed to take part, fewer than half of those registered in each market, so the results cannot be generalised to all traders in these markets or to those in other cities, and the instrument, developed by the authors, had content validation but no confirmatory factor analysis. Nor were sociodemographic data collected to control for age, schooling or business size. Future studies should combine the questionnaire with tax administration data and with marker variables for method bias.

Use of artificial intelligence

The authors used Claude (Anthropic), model Claude Opus 5.5, to support the writing and revision of the thesis from which this article derives, its reorganisation into the journal format and its translation into English, in order to fit the manuscript to the publication guidelines. The authors reviewed and edited all the text and take full responsibility for its content. No data, analysis or result was generated by the tool.

Preregistration

The study was not preregistered.

Data availability

Underlying data

Zenodo: Financial literacy and tax management among market traders in northern Peru: underlying data. https://doi.org/10.5281/zenodo.23455377 (Herrera et al., 2026c).

This project contains the following underlying data:

- datos_anonimizados_educacion_financiera_gestion_tributaria.csv: anonymised responses of the 218 traders to the 36 questionnaire items, without e-mail address or timestamp.
- diccionario_de_datos.csv: code of each column, item wording, the variable or dimension it belongs to and the response scale.

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

Extended data

Zenodo: Financial literacy and tax management among market traders in northern Peru: questionnaire and study materials. https://doi.org/10.5281/zenodo.23455410 (Herrera et al., 2026a).

This project contains the following extended data:

- Full 36-item questionnaire, in Spanish and English.
- Informed consent form.
- STROBE checklist for cross-sectional studies.

Data are available under the terms of the Creative Commons Attribution 4.0 International license (CC-BY 4.0).

Code availability

The R script used to obtain all results is available from Zenodo: https://doi.org/10.5281/zenodo.23455535 (Herrera et al., 2026b), under the MIT license.

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