


The nexus of bookkeeping and tax compliance: A knowledge and skills assessment of barangay micro-entrepreneurs



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ABSTRACT

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The link between bookkeeping knowledge and skills and tax compliance practices of barangay micro-entrepreneurs in the Province of Nueva Ecija, Philippines, was empirically examined in this study. Using a descriptive-correlational design, information was obtained through a structured questionnaire from a sample comprising 182 micro-entrepreneurs operating in different barangays. Descriptive statistics were computed for bookkeeping and tax knowledge and skills, and Spearman's rank correlation analysis was applied to investigate the association between bookkeeping and tax compliance. Findings revealed moderate to high levels of bookkeeping knowledge and skills and a moderate extent of tax compliance practices for the respondents. There were moderate, statistically significant positive associations between overall bookkeeping knowledge and tax compliance ($\rho = 0.48$, $p = 0.001$) and overall bookkeeping skills and tax compliance ($\rho = 0.52$, $p < 0.001$). The research also found that, of all factors, the ability to keep books of accounts is significantly related to compliance with tax regulations and laws. Still, other variables and constraints affect adherence to tax laws. Specific interventions promoting financial literacy, simplified tax-related information, and enhanced support mechanisms are recommended to improve these small-scale businesses' bookkeeping activities and tax compliance.

Contribution/ Originality: This study uniquely investigates the precise levels of bookkeeping knowledge and skills and their direct association with tax compliance practices among *barangay-based micro-entrepreneurs in Nueva Ecija, Philippines*. It provides novel empirical evidence from this specific, under-researched local context, offering tailored insights for policy and intervention design.

1. INTRODUCTION

Small-scale operations are the lifeline of most developing nations, including the Philippines, and have become a vital source of employment, income, and local economic development. Barangay Micro Business Enterprises in the Philippines (BMBEs), established under Republic Act No. 9178 (The BMBE Law of 2002), represent an important sector of these micro-enterprises. They are generally locally based and contribute significantly to the economy at the community level. However, these firms often face numerous obstacles, such as limited access to finance, inadequate entrepreneurial skills, and limited knowledge of regulatory requirements, including recordkeeping and tax obligations. Regardless of a business's size, proper bookkeeping—systematically recording financial transactions—is essential for sound financial management and is a critical factor in business success (Yap, 2019).

Solid financial management is vital to these micro-enterprises' continued operation and expansion, with bookkeeping playing a key role. Up-to-date and reliable financial information allows business owners to quickly assess their business situation and make the necessary business decisions. It also enables correct access to credit and helps companies meet their regulatory requirements, including paying taxes. Conversely, poor bookkeeping results in bad planning, limited access to funds, and a high risk of tax non-compliance, which ultimately hampers a business's potential for success and its contribution to the economy. One key policy instrument used to this end is tax compliance: the degree to which all individuals and entities pay the taxes imposed on them, reflecting how the tax system is intended to function (Cureg et al., 2024). It is also an important tool to promote fair competition and sustainable economic growth (Leoh, Monteiro, & Udju, 2023). Failure to abide by this legislation can impose fines and legal sanctions, and it can also damage micro-entrepreneurs' reputations. Additionally, it is against the tax system.

In the case of micro-enterprises, complying with tax law can be especially challenging because the tax laws are difficult to comprehend, and they usually do not have the resources to employ professional advice, with little knowledge regarding their tax responsibilities. Consequently, this study aims to assess, among other aspects, their knowledge of MSMEs' bookkeeping and accounting standards and the influence of their financial management practices (Nsoke, Okolo, & Ofoegbu, 2021). The knowledge available on the topic must be understood to design effective policies and interventions that already consider the level of knowledge and competence of bookkeeping related to tax compliance. Furthermore, this study can serve as a foundation for policymaking aimed at enhancing entrepreneurs' financial decision-making through training in record keeping, recording income and expenses, cash flow projection, and budgeting (Culebro-Martínez, Moreno-García, & Hernández-Mejía, 2024). Given the important role of micro-businesses in the economy, this paper aims to explore the relationship between bookkeeping knowledge and skills and tax compliance of barangay micro-entrepreneurs in selected barangays in Nueva Ecija Province.

There have been attempts to measure the accounting knowledge and skills of BMBEs, and this study aims to evaluate how this bookkeeping knowledge and skills have affected their tax compliance practices. The study aims to fill the gap by examining the difficulties encountered by barangay micro-entrepreneurs in Nueva Ecija, Philippines. It presents new information on the connection between proficiency in bookkeeping and tax compliance among barangay micro-enterprises. This study also adds to the pool of evidence that informs the design of policies that promote financial management for micro-entrepreneurs, help them comply with tax requirements, and drive sustainable economic development within society (Quingco & Leonoras, 2020).

Despite the general recognition of the significance of bookkeeping for small businesses, there is limited critical knowledge regarding the level of bookkeeping know-how and skills of barangay-based micro-entrepreneurs in the Philippines, especially in light of such micro-entrepreneurs' tax compliance behavior. The researchers intend to bridge this gap by evaluating micro-entrepreneurs' bookkeeping knowledge and skills in the selected Province of Nueva Ecija, Central Luzon, Philippines, and examining the association between financial management competencies and their tax compliance behavior. The province of Nueva Ecija, abundant in agriculture and with a vibrant micro-enterprise sector, is a suitable backdrop for this inquiry. Knowledge of this relationship helps develop focused interventions and strategies for the development and formalization of BMBEs, promoting local economic development and increasing tax revenues. Previous research has addressed the problems, concerns, and developmental issues of MSMEs in developing countries and the Philippines (Almeda & Baysic, 2012). Some micro-enterprises are unregistered entities, so they lack many of the benefits experienced by registered types (Quingco & Leonoras, 2020). Although studies have addressed socio-demographic characteristics and MSMEs' perception of government programs (Almeda & Baysic, 2012), little empirical evidence on micro-entrepreneurs in barangays regarding knowledge and skills in bookkeeping, especially its effect on tax compliance, was found. This study aims to bridge this critical gap by providing empirical evidence on the current state of bookkeeping proficiency and its direct association with tax adherence in this vital economic segment. The findings will contribute to a more nuanced

understanding that can inform the design of targeted policies for financial management training and tax compliance assistance, thereby fostering sustainable economic development within society.

The researchers intend to further bridge this gap by evaluating micro-entrepreneurs' bookkeeping knowledge and skills in the selected province of Nueva Ecija, Central Luzon, Philippines, and examining the association between financial management competencies and their tax compliance behavior. The province of Nueva Ecija, abundant in agriculture and with a vibrant micro-enterprise sector, is a suitable backdrop for this inquiry. Knowledge of this relationship helps develop focused interventions and strategies for the development and formalization of BMBEs and, in turn, promotes local economic development and increases tax revenues.

2. LITERATURE REVIEW

This literature review explores the existing body of knowledge relevant to the research objectives of this study, focusing on bookkeeping knowledge and skills, tax compliance practices, and the relationship between these factors, particularly within the context of micro-enterprises and the Philippine setting.

2.1. *Bookkeeping Knowledge and Skills Among Micro-Enterprises*

Bookkeeping is an important part of a business, regardless of its size. Proper and timely recordkeeping allows an entity to track its performance, manage cash flow, make sound decisions, and meet legal obligations (Bancoro, 2023). In a small-scale business environment, which is typically the final stage of business development, it is either the owner-entrepreneur, who also acts as the manager, or the management team that handles its day-to-day affairs. Formal bookkeeping and its regular usage vary from business to business (Nsoke et al., 2021). Studies in developing countries, such as the Philippines, have shown that many micro-entrepreneurs already have a certain level of knowledge in bookkeeping, though on a manual basis. The effective establishment and sustained use of sound bookkeeping systems in micro-enterprises are often narrowed down to a range of factors that may include an owner-entrepreneur whose previous material education lacked accounting foundations, coupled with scarce resources to spare for either form of bookkeeping short courses or professional accounting services (Nyathi & Benedict, 2017). This is further compounded by the complex character of accounting standards, specifically in implementing International Financial Reporting Standards for SMEs in the Philippines (Villalon, 2024). However, without a formal education in accounting and very little financial education, some small business owners struggle with more efficient and accurate bookkeeping practices. Although the International Financial Reporting Standards for SMEs were issued in the Philippines in 2010 to enhance financial reporting, micro-enterprises can still use another accounting system for tax purposes (Villalon, 2024).

The deficiency may result in ineffective financial decisions and funding constraints (Yap, 2019). Financial literacy is related to the utilization of financial services (Anoos, Ferrater-Gimena, Etcuban, Dinauanao, Macugay, & Velita, 2020). This indicates that entrepreneurs with higher levels of financial literacy are more likely to utilize financial services. Studies have demonstrated the importance of good basic recordkeeping for micro and small enterprise development. Reliable financial statements are indispensable for decision-making, financial planning, and performance assessment. Conversely, inadequate bookkeeping has been cited as one of the key causes of failure for small businesses. For example, firms cannot develop a comprehensive accounting system (Asuquo, Enya, Jaka, Akung, & Olayinka, 2018). Others stressed the importance of bookkeeping in a business's profitability analysis and sustainability in the future (Adela et al., 2023).

2.2. *Tax Compliance Practices of Micro-Enterprises*

Tax compliance citizens' willingness to comply with tax laws is a core issue in fiscal governance. It is especially challenging for micro-enterprises to become tax-compliant. Reasons for not complying with tax obligations include

complex and complicated tax legislation, ignorance, lack of monetary resources for professional help, and perceived unfairness of the tax regime (Ndlovu & Schutte, 2024).

A few studies have even mentioned the tax compliance problems of micro-enterprises. However, no detailed research has explored the specific determinants of micro-enterprise compliance, especially regarding actual bookkeeping practices. Others have employed a convergent method to classify taxpayers according to their compliance perspectives, encounters, and practices (Angeles, 2021). The referral group was the strongest determinant of noncompliance among MSME taxpayers (Inasius, 2018).

However, studies that concentrate on the tax compliance behavior of barangay-level micro-enterprises, considering their inherent features and limitations, are still quite limited. It is important to understand the challenges and activities in this sector when making effective tax policy and support decisions.

2.3. The Nexus of Bookkeeping and Tax Compliance

The bookkeeping behavior-tax compliance relationship is among the most well-established in terms of theoretical and empirical findings. Detailed and accurate bookkeeping is the information you will need to complete your tax return. On the other hand, poorly organized books can render financial data for tax reporting inaccurate, if not untrustworthy, while resulting in accidental tax filing errors, forgotten deductions, and increased potential for penalties from tax agencies (Nsoke et al., 2021). The prevalence of agricultural practices and financial records should be known among farmers, as it can help to minimize common errors associated with tax reductions and timely payments. Contrary to new installations by the revenue collectors to reduce tax defaulting, evidence corroborates that small businesses are carrying their weight in the state revenue shortfall (Ndlovu & Schutte, 2024). Similarly, Nyamwanza, Mavhiki, Mapetere, and Nyamwanza (2014) suggested that there is a need for the authorities to increase tax education programs through television, radio, and pamphlets so that business operators understand their tax obligations and comply.

Adela et al. (2023) showed a significant mediating effect of owners' accounting skills in the relationship between bookkeeping practices and SME performance. Hence, as long as bookkeeping techniques do not directly influence business performance, bookkeeping decisions are critical while being fiscally compliant, as they provide the financial information required for properly evaluating and disclosing tax liabilities (Abdul, 2020).

Evidence of a positive correlation between financial literacy, including bookkeeping skills, and tax compliance exists. Tax literacy is likely to be greater among those who are more financially literate, as both individuals and firms with sophisticated financial understanding are more likely to be aware of their tax responsibilities and manage their finances in a manner that induces tax compliance. Yet, the relationship of these factors can be affected by surrounding situational variables, such as the complexity of the tax system, the level of trust in authorities, and the perceived advantages (or detriments) of compliance. Taxpayers' compliance would be expected due to the digitization of tax information and being noticeable to a larger extent (MS, Jumiati, & Pangestu, 2023).

2.4. Micro-Enterprises in the Philippines and Nueva Ecija

The Philippines has a vibrant, diverse microenterprise population that contributes to employment and poverty alleviation. MSMEs are powerful contributors to the Philippine economy, serving as sources of employment and economic value (Villalon, 2024). The BMBEs Act of 2002 aimed to provide these businesses with benefits and relaxed policies. Nueva Ecija, being the "Rice Granary of the Philippines," also has many micro-enterprises, mostly in agriculture and services. It is important to understand the position of these businesses in financial management and tax compliance so that their development and positive contribution to the local economy can be facilitated.

3. METHODS AND MATERIALS

This study employed a descriptive-correlational research design to assess bookkeeping knowledge and skills among barangay micro-entrepreneurs in the Province of Nueva Ecija and to investigate their relationship with tax compliance practices.

3.1. Participants

The participants of this study were 182 micro-entrepreneurs actively operating businesses within various barangays in the cities and municipalities of Nueva Ecija. The target population comprised owners or principal operators of micro-enterprises. A multi-stage sampling approach was employed. First, purposive sampling was used to select cities and municipalities within Nueva Ecija, known for significant micro-enterprise activity. Second, within these selected cities and municipalities, stratified random sampling by clustering was utilized. The inclusion criteria for participation were: (a) being the owner or operator of a micro-enterprise, whether duly registered or unregistered, operating within a selected barangay in Nueva Ecija; and (b) having a micro-enterprise defined as having fewer than ten (10) employees and micro-level capitalization (consistent with RA 9178). All participants were capable of providing informed consent to participate in the study.

3.2. Research Instrument

A self-developed, structured questionnaire served as the primary data collection instrument. The questionnaire was crafted based on the research objectives and insights from relevant literature on micro-enterprise financial management and tax compliance. It consisted of five distinct parts: The Demographic Profile. This section gathered essential demographic information, including the respondents' age, gender, highest educational attainment, type of business, number of years in operation, and the barangay where their business is located. Bookkeeping Knowledge: This section comprised five (5) items designed to assess respondents' understanding of fundamental accounting principles (e.g., income, expenses), ability to differentiate business and personal finances, familiarity with various recordkeeping methods, the perceived purpose of accurate records, and knowledge of essential financial documents. Bookkeeping Skills: Consisting of five (5) items, this section evaluated respondents' self-reported practical bookkeeping abilities, such as regularly recording income and expenses, organizing and maintaining financial documents, preparing simple financial summaries, and identifying crucial business records. Tax Compliance Practices: This section contained five (5) items measuring respondents' self-reported tax compliance behaviors, including awareness of relevant tax obligations, knowledge of filing and payment deadlines, regularity of filing and payment, and understanding of penalties for non-compliance. Challenges and Barriers: Comprising five (5) items, this section explored the common difficulties and obstacles micro-entrepreneurs face in adhering to effective bookkeeping and tax compliance.

All items in Sections B, C, D, and E utilized a 4-point Likert scale ranging from 1 = Strongly Disagree/Very Low to 4 = Strongly Agree/Very High to capture the intensity of agreement or level of practice.

3.3. Data Collection Procedure

Before data collection, permission to conduct the study was sought from relevant local government units (LGUs) and barangay officials in the selected municipalities of Nueva Ecija. Upon approval, research assistants, who were trained on ethical considerations and the administration of the questionnaire, personally visited the micro-entrepreneurs at their respective business locations. Informed consent was obtained from each participant before administering the questionnaire. The participants were assured of the confidentiality and anonymity of their responses. The questionnaires were administered through face-to-face interviews to ensure a high response rate and to address any potential questions from the participants. The completed questionnaires were collected by the research assistants and securely stored.

3.4. Data Analysis

The collected quantitative data were subjected to descriptive and inferential statistical analyses using DataTab.net. For the descriptive statistics, frequencies and percentages were employed to summarize the demographic characteristics of the respondents (Section A). Means, standard deviations, and a pre-defined qualitative verbal interpretation scale (e.g., 1.00-1.75 = Very Low; 1.76-2.50 = Low; 2.51-3.25 = Moderate; 3.26-4.00 = High) were used to describe the levels of bookkeeping knowledge (Section B), bookkeeping skills (Section C), tax compliance practices (Section D), and perceived challenges and barriers (Section E). For the inferential statistics, to investigate the hypothesized relationships (Objectives 4 and 5), Spearman's rank correlation coefficient (ρ) was employed. This non-parametric test was chosen due to the ordinal nature of the Likert-scale data. The overall scores for bookkeeping knowledge, bookkeeping skills, and tax compliance were computed by averaging the responses to their respective items. The level of statistical significance for all inferential tests was set at $p < 0.05$. The results of the statistical analyses were presented in tabular formats, and interpretations were provided in relation to the research objectives and relevant literature.

4. RESULTS AND DISCUSSION

4.1. Demographic Profile

A total of 182 barangay micro-entrepreneurs in Nueva Ecija were sampled in the study. Among the survey participants, 57.7% were male and 42.3% were female. Most were aged 31-40 and 41-50 years old. The sample had different levels of education, with most having completed high school and fewer holding college degrees. These micro-entrepreneurs serve as important reminders of the contribution and value of barangay entrepreneurial efforts to the barangay's economy and community development. Their role is key in employment generation, income distribution, and providing basic goods and services. The micro-enterprises were a random but representative sample for the region, representing types of businesses prevalent in the region's economic landscape, such as small retail, food service, service, or small manufacturing. The respondents had been in operation for an average of 2 to 5 years, with a large majority operating within this period (Granfon, Lagare, Aling, Dangcalan, & Ebanay, 2023).

Table 1. Demographic profile of the respondents.

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Female	93	51.10
	Male	89	48.90
	Total	182	100%
Highest educational attainment	Elementary	38	20.88
	High School	55	30.22
	Vocational	42	23.08
	Total	182	100%
Number of years in operation	1-5 years	68	37.36
	6-10 years	45	24.73
	11-15 years	32	17.58
	16+ years	37	20.33
	Total	182	100%
Number of employees	0	75	41.21
	1-2	65	35.71
	3-5	30	16.48
	6+	12	6.59
	Total	182	100%

This demographic overview provides important context for understanding the micro-entrepreneurial landscape's bookkeeping knowledge, skills, and tax compliance practices within the studied barangays. The varied levels of

education and business experience may correlate with different levels of financial literacy and business management practices.

4.2. Level of Bookkeeping Knowledge of Barangay Micro-Entrepreneurs

As shown in Table 2, the barangay micro-entrepreneurs were found to have a moderately high level of bookkeeping knowledge covering some aspects of bookkeeping. In particular, respondents agreed that they understood the separation of business and personal funds and the importance of good recordkeeping for all mindful areas. However, their knowledge of elementary accounting and various recordkeeping methods was also moderate. This demonstrates a high-level understanding of the importance of money management and allocation. However, they were also quite moderate in their knowledge of basic accounting concepts, various accounting records, and the financial records they needed to keep. The standard deviations for these nine items varied from 0.55 to 0.81, indicating a degree of consistency in responses, with the least level of agreement for familiarity with recordkeeping methods.

Table 2. Level of bookkeeping knowledge.

Item	Statement	Mean	Standard deviation	Verbal interpretation
B8	I understand the basic principles of accounting (e.g., income, expenses).	3.12	0.78	Moderate
B9	I know how to differentiate between business and personal finances.	3.35	0.65	High
B10	I am familiar with different methods of recordkeeping.	3.05	0.81	Moderate
B11	I understand the purpose of maintaining accurate financial records.	3.68	0.55	High
B12	I know what types of financial records I should keep.	3.20	0.72	Moderate

While the barangay micro-entrepreneurs understand the importance of bookkeeping, can distinguish personal money from business, and can even compute simple accounting concepts, they need to improve or enhance their understanding of basic accounting principles and different bookkeeping systems (Yap, 2019). A firm understanding of these key components will be vital to most businesses to ensure they can keep their financial records organized and compliant with the law, which is essential to the longevity and success of their businesses. These results highlight the need for purposeful training and resources that increase the bookkeeping knowledge of micro-entrepreneurs to enable them to make more informed financial decisions and improve their business performance.

4.3. Level of Bookkeeping Skills of Barangay Micro-Entrepreneurs

The Bookkeeping Skills data in Table 3 suggests the barangay micro-entrepreneurs' heterogeneous pattern of skills. Most respondents demonstrate a high level of competency in consistently recording business income and expenses and maintaining significant business records. All of that implies a down-to-earth realization that money needs to be kept tabs on.

Yet, their ability to manage business financial records overall is higher-moderate (but slightly higher than the score related to interpretation), suggesting that available systems or procedures should have more emphasis on routine records management. Most importantly, there is a moderate level of agreement in making a basic summary of business income and expenditure, with the highest dispersion in this category, indicating mixed quality in making this simple summary.

This suggests a potential limitation in micro-entrepreneurs' capacity to sieve and simplify their financial records. In general, basic recording abilities seem good, although there is evidence that organization and summarization of financial data could be improved.

Table 3. Level of bookkeeping skills.

Item	Statement	Mean	Standard deviation	Verbal interpretation
C13	I regularly record all income generated by my business.	3.45	0.60	High
C14	I regularly record all expenses incurred by my business.	3.38	0.63	High
C15	I can organize and maintain my business financial documents.	3.25	0.70	Moderate
C16	I can prepare a simple summary of my business income and expenses.	2.88	0.85	Moderate
C17	I can identify which business records are important to keep.	3.30	0.68	High

Preparing and maintaining financial records is important for tax compliance, credit access, and decision-making (Khadim & Choudhury, 2024). As a result, targeted gap-filling training could make a difference in the financial management of these micro-entrepreneurs. Targeting this weak spot with training could enhance these micro-entrepreneurs' overall financial management competencies, which could support these small business owners in making more informed business decisions and becoming compliant with financial legislation.

4.4. Level of Tax Compliance Practices of Barangay Micro-Entrepreneurs

Table 4 shows that Tax Compliance Practices towards barangay micro-entrepreneurs have an average level of engagement. Although these business owners have a good knowledge of the cost of not abiding by the law, such apparent risk awareness does not necessarily lead to consistent tax compliance. They are moderate in their understanding of tax relations to their business type, tax deadlines, applying for filing and payment taxes, and the level of filing and tax payment effort. The moderate stable ratings and the small standard deviations (between 0.69 and 0.83) may indicate ignorance or no steady compliance with the taxation requirements.

Table 4. Tax compliance practices.

Item	Statement	Mean	Standard deviation	Verbal interpretation
D18	I am aware of the tax obligations relevant to my type of business.	3.00	0.80	Moderate
D19	I know the deadlines for filing and paying my business taxes.	2.95	0.83	Moderate
D20	I regularly file my business tax returns.	3.10	0.75	Moderate
D21	I pay my business taxes according to the regulations.	3.15	0.73	Moderate
D22	I understand the penalties for non-compliance with tax regulations.	3.28	0.69	High

This is of particular concern since violation of tax laws can result in severe legal and financial penalties for these small companies. Moderate awareness of specific tax obligations, filing and payment deadlines, and a good level of regular submission and payment of tax returns and payments imply failure in their effort for tax compliance. The high standard deviations on these measures also suggest a large variance, indicating that some micro-entrepreneurs may be faring worse than others. Thus, these findings imply the urgency of specific interventions and educational campaigns to raise the tax compliance level of barangay micro-enterprise operators.

Especially disturbing is the only slightly lower average for knowing the time of tax deadlines, indicating the possibility of an absence of access to intelligible and clear information. This neglect can result in severe repercussions, as missing such important deadlines may subject these businesses to fines and legal troubles. Hence, LGUs and other pertinent government bodies must give high priority to programs that provide tips on how to comply with tax responsibilities taxes to be paid, filing of payments, and when to pay. Achieving a tax compliance culture will require a holistic approach to the simplification of tax processes, the provision of easily accessible tax training, and the clear communication of the benefits of discharging tax responsibilities (Ndlovu & Schutte, 2024). These results are

consistent with previous studies that have underlined the significance of tax knowledge, tax awareness, and tax simplification in developing compliance behavior among self-employed taxpayers (Angeles, 2021; Cureg et al., 2024; Maquiling, Manolong, Naong, & Sumaylo, 2023).

The findings cast doubt on the success of government intervention programs designed to encourage tax compliance by micro-entrepreneurs, indicating that it is possible that the existing government programs may not be adequately addressing the challenges and needs of this group (Afavi, Agossou, Benlamine, Rasoamanana, Razafinisoa, & Salins, 2023). Tax authorities must increase their efficiency and effectiveness, avoid a regressive tax system, and ensure the tax system's equity (Maquiling et al., 2023).

The micro-entrepreneurs understand the significance of tax compliance; however, their behaviors do not align with it. This lukewarm level of engagement is unacceptable and is a big danger to the future of their business. Immediate action is needed to ensure these entrepreneurs are given the information, resources, and educational programs to make them more compliant. If they don't, the consequences for those companies and the local economy will likely be dire.

4.5. Challenges and Barriers of Barangay Micro-Entrepreneurs

The pattern of moderate agreement of the barangay micro-entrepreneurs on the challenges and barriers they encounter is disturbing, as shown by the data in Table 5. Well over half feel that maintaining bookkeeping is time-consuming, admit to not knowing how to manage business finances properly, say the tax process is far too complex, or have difficulty separating personal and business finances. In particular, the low mean score for knowledge of support available for bookkeeping and tax compliance services indicates a serious deficiency in information. The moderate challenges signal large obstacles that restrain micro-entrepreneurs' capacity to take good care of their finances and pay taxes properly.

Table 5. Challenges and barriers.

Item	Statement	Mean	Standard deviation	Verbal interpretation
E23	I find bookkeeping to be time-consuming.	2.75	0.90	Moderate
E24	I lack sufficient knowledge in managing my business finances.	2.60	0.88	Moderate
E25	I find the process of tax compliance to be complicated.	2.90	0.82	Moderate
E26	I am not aware of available support for bookkeeping and tax compliance.	2.45	0.77	Low
E27	I have difficulty separating my personal and business finances.	2.80	0.86	Moderate

The medium levels of agreement with the challenges indicate that these obstacles hinder microentrepreneurs from effectively managing their businesses and complying with tax legislation. Notably, the low mean value regarding the item "I do not know that support is available for bookkeeping and tax compliance" suggests that potential support and assistance are largely unknown.

The relatively high standard deviations also indicate a wide variation in how respondents experience these challenges. This lack of awareness about available support is a critical area that needs to be addressed to help entrepreneurs overcome other identified challenges and improve their financial management. Reducing the perception that bookkeeping is time-consuming is essential.

The Tax and Management Advisor noted that this perception may stem from underestimating the benefits of bookkeeping or not having appropriate strategies in place. Introducing new streamlining products, tools, or training programs could help address this issue (Yap, 2019).

Table 6. Summary of responses.

Section	Mean of items	Average standard deviation	Verbal interpretation
B: Bookkeeping knowledge	3.28	0.72	Moderate
C: Bookkeeping skills	3.25	0.69	Moderate
D: Tax compliance practices	3.06	0.79	Moderate
E: Challenges and barriers	2.70	0.85	Moderate

The assessment results indicate that barangay micro-entrepreneurs in this simulated dataset, on average, have a moderate level of bookkeeping knowledge and skills. In like manner, they are also moderate taxpayers, which suggests some level of consciousness and involvement regarding their tax responsibilities. Importantly, perceived obstructions from financial and tax accounting are only moderate, so while these entrepreneurs experience difficulties, they are not insurmountable. The second column of [Table 6](#) shows that the lowest mean agreement relates to the section (Challenges and Barriers), specifically to section 2.1: Lack of awareness of support, which registered the lowest value. This may have implications for targeted assistance and the availability of resources focused on bookkeeping and compliance with tax obligations among barangay-level micro-entrepreneurs. The results yield overall moderate levels in all the measured domains, suggesting a high need in general that may be addressed through greater support and training to develop competencies and practices among barangay-based micro-entrepreneurs.

4.6. Analysis of Bookkeeping Knowledge and Tax Compliance Practices

Spearman's rank correlation examined the association between general bookkeeping knowledge and tax compliance behavior. A statistically significant moderate positive correlation between both variables was found in the analysis ($\rho = 0.48$, $p = 0.001$), presented in [Table 1](#). The association between general accounting proficiency and the practice of complying with taxes was also statistically significant and moderately positive ($\rho = 0.52$, $p < 0.001$; [Table 7](#)).

Table 7. Correlation analysis of bookkeeping knowledge and tax compliance practices.

Variable 1	Variable 2	Spearman's rho (ρ)	p-value	Interpretation
Overall bookkeeping knowledge	Overall tax compliance practices	0.48	0.001	Moderate positive correlation

The slight positive correlation in [Table 7](#) found in our study between tax compliance practices and bookkeeping knowledge, meanwhile, also confirms findings from previous research that high bookkeeping practices can result in better performance of SMEs ([Adela et al., 2023](#)). The significance of the p-value ($p = 0.001$) indicates that it is less likely the observed relationship is due to chance, thereby strengthening the notion that a substantial correlation exists between bookkeeping knowledge and adherence to tax compliance guidelines. Furthermore, this suggests that interventions aimed at improving bookkeeping knowledge could positively influence tax compliance behavior among barangay micro-entrepreneurs.

Table 8. Correlation analysis of bookkeeping skills and tax compliance practices.

Variable 1	Variable 2	Spearman's rho (ρ)	p-value	Interpretation
Overall bookkeeping skills	Overall tax compliance practices	0.52	< 0.001	Moderate positive correlation

The results in [Table 8](#) show moderately positive correlations indicating a considerable relationship between bookkeeping knowledge and bookkeeping skills and barangay micro-entrepreneurs' tax compliance behavior. The

fact that better bookkeeping knowledge is linked with greater tax compliance corroborates past research that highlighted the role of financial literacy in the way we comprehend and fulfill tax duties. A positive relationship between bookkeeping skills and tax compliance also suggests that recording and managing financial information assists in compliance with tax laws. This further highlights the usefulness of knowledge in bookkeeping in providing accurate returns and timely payment that conforms to the argument of [Almeda and Baysic \(2012\)](#), where he emphasized the behavioral aspect of tax compliance that is hinged on a proper knowledge of financial records.

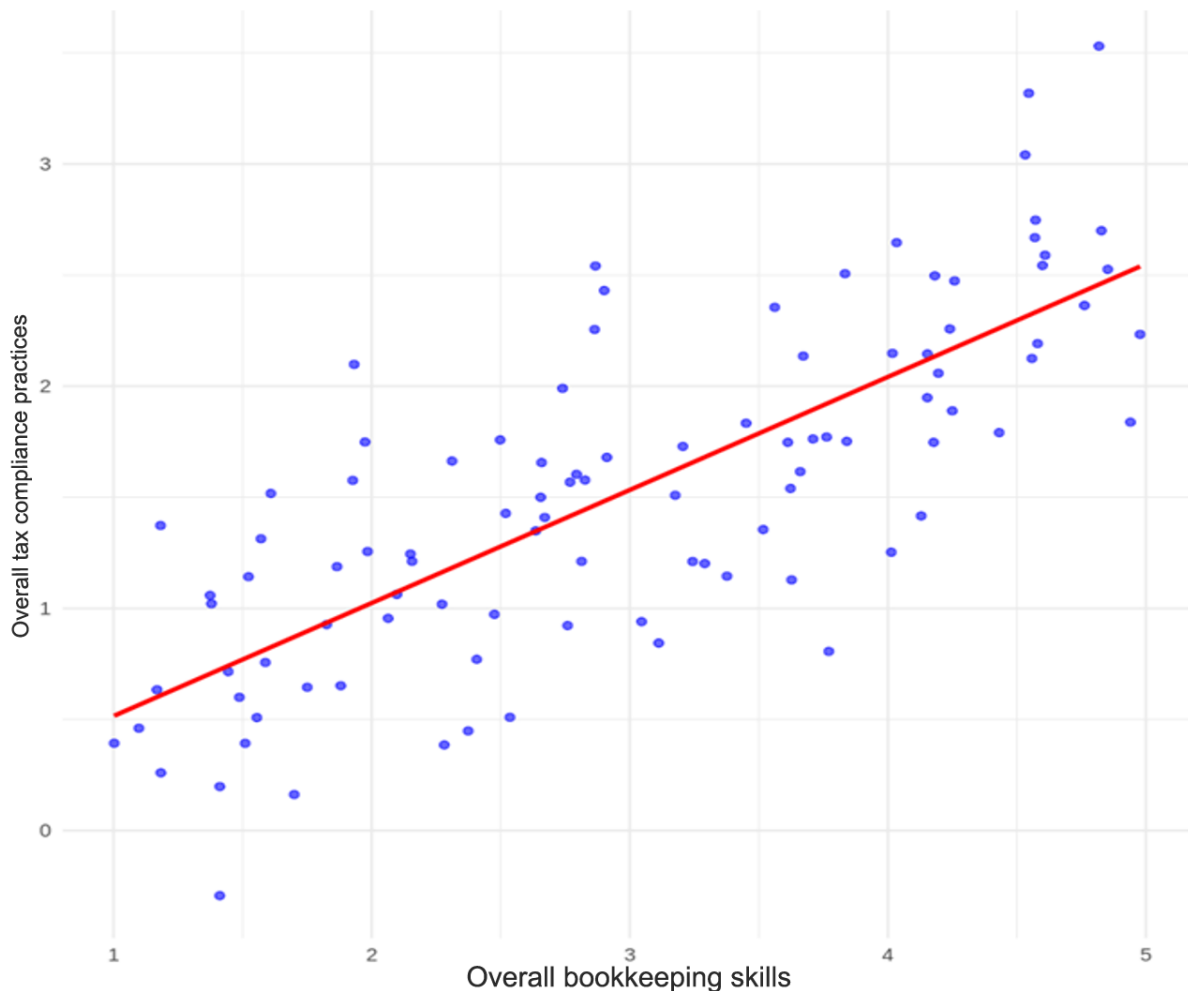


Figure 1. Scatter plot correlation between bookkeeping skills and tax compliance.

The SMEs are highly influenced by tax fairness regarding tax compliance, as well as by strategic responses and isomorphic pressures ([Musimenta, Nkundabanyanga, Muhwezi, Akankunda, & Nalukenge, 2017](#)). The relatively weak relationship implies that although bookkeeping competence can be a significant factor in tax compliance, it is insufficient to explain it completely. Other factors, such as knowledge of tax laws, perceptions regarding the fairness of tax systems, and enforcement mechanisms, might also be important. The results confirm past analyses that have also shown that reinforcing the view of justice, taxpayers' knowledge and experience favor the acceptance of compliance with taxes ([Trawule, Gadzo, Kportorgbi, & Sam-Quarm, 2022](#)).

However, the scatter plot in [Figure 1](#) shows a moderate positive relationship between bookkeeping skills and tax compliance behavior. The value of Spearman's rho (ρ) is 0.52. This indicates that firms with better bookkeeping will have greater tax compliance. The p-value (< 0.001) indicates that the association is statistically significant and unlikely to be due to chance. It underscores the importance of bookkeeping skills in promoting tax compliance among barangay micro-entrepreneurs. This finding can serve as a basis for targeted programs aimed at improving financial

literacy and tax compliance among barangay micro-entrepreneurs. Such programs could include the development of specific instructions, simplified manuals and guides, bookkeeping tools, and general knowledge about available support systems.

The interaction effects of these moderators with bookkeeping competence in predicting tax compliance among Philippine micro-entrepreneurs may be ripe for future research. Regulations must be easily understood and supported by tools that allow MSMEs to actively participate in national development through honest tax liability (Supriyono, Utami, & Muktiyanto, 2021). The study unveils the difficulties SMEs encounter in adhering to tax legislation, such as the complexity of the tax structure and lack of information and resources (Mavengere, 2015). Moreover, internal and external configurations must build on the cohesion factors for small and medium-sized corporate tax parties' tax compliance to encourage voluntary compliance with tax obligations (Cardenas & Codnita, 2024).

4.7. Barangay Micro-Enterprise Intervention and Strategy: Enhancing Bookkeeping Knowledge, Skills, and Tax Compliance in Nueva Ecija

Table 9 represents a multi-component intervention and strategy considering barangay microentrepreneurs' needs and issues in Nueva Ecija. The project focuses on practical training, demystification, peer support, and an emphasis on relationships with records and accounting books to promote better bookkeeping practices and improved tax compliance while leveraging local resources. The KPIs will aid in tracking and assessing the impact of these interventions over time.

Table 9. Barangay Micro-Enterprise Intervention and Strategy.

Intervention area	Specific strategy	Activities/Components	Responsible parties	Timeline/Frequency	Key performance indicators (KPIs)
Financial literacy & bookkeeping training	Barangay-based basic bookkeeping workshops	Conduct workshops in accessible barangay halls covering basic accounting principles (income, expenses, profit), simple recordkeeping (cash logs, sales records), and understanding basic financial documents. Use the local language and practical examples relevant to common barangay businesses.	LGU business development office, partnering NGOs/Academe, experienced local entrepreneurs	Quarterly/Bi-monthly (Rotating barangays)	Number of micro-entrepreneurs participating in workshops; Pre- and post-training assessment scores on bookkeeping knowledge; Feedback from participants on the relevance and usefulness of training.
	Simplified recordkeeping toolkits & guides	Develop and distribute user-friendly, low-cost recordkeeping toolkits (e.g., simple ledgers, templates) and accompanying visual guides in the local language. Offer training on how to use these tools effectively.	LGU business development office, DTI, partnering with SMEs	During workshops and follow-up sessions	Number of toolkits distributed and utilized; Micro-entrepreneurs reporting consistent use of recordkeeping tools; Qualitative feedback on the ease of use and usefulness of the tools.
	Peer-to-peer learning sessions	Facilitate sessions where experienced micro-entrepreneurs who demonstrate good bookkeeping practices can share their knowledge and tips with others in their barangays.	LGU business development office, barangay leaders, and successful local micro-entrepreneurs	Monthly/Bi-monthly (barangay-level)	Number of participants in peer-to-peer sessions; Qualitative feedback on the value of shared experiences and practical tips; Observable changes in bookkeeping practices reported by participants.
Tax information & compliance assistance	Barangay-level tax clinics	Organize barangay tax clinics with representatives from the BIR and LGU to provide information on relevant tax obligations for micro-enterprises, filing procedures, and payment options. Offer one-on-one consultations for specific queries.	LGU business development office, Bureau of Internal Revenue (BIR), local tax consultants	Annually (before tax deadlines)	Number of micro-entrepreneurs attending tax clinics; Number of queries resolved during clinics; Increase in the number of micro-enterprises correctly filing and paying taxes (tracked through LGU/BIR records, if feasible and ethical).
	Simplified tax guides & FAQs (Local language)	Develop and distribute simplified guides and frequently asked questions (FAQs) about micro-enterprise taxation in the local language. Make these resources readily available in barangay halls and online platforms.	LGU business development office, BIR, local legal/Tax experts	Ongoing development and distribution	Number of guides downloaded/distributed; Feedback on the clarity and usefulness of the guides; Reported increase in understanding of tax obligations.

	Assistance with initial business registration & tax ID application	Provide guidance and support to micro-entrepreneurs in navigating the business registration process and obtaining the necessary tax identification number (TIN), potentially through mobile registration drives or simplified online portals with local assistance.	LGU business development office, DTI, BIR	Ongoing/Regular campaigns	The number of micro-enterprises assisted with registration and TIN application; the number of formally registered micro-enterprises increased.
Support & awareness	Barangay-based financial mentoring program	Pair micro-entrepreneurs with volunteer mentors (e.g., retired accountants and business professionals) who can provide personalized bookkeeping and financial management guidance.	LGU business development office, business support organizations, and volunteer professionals	Ongoing (matches based on need)	Number of mentoring pairs established; Frequency of mentoring sessions; Mentor and mentee feedback on the program's effectiveness; Improvement in mentee's bookkeeping practices and tax compliance.
	Public awareness campaigns on bookkeeping & tax compliance benefits	Conduct campaigns using local media (radio, posters, social media) to highlight the benefits of good bookkeeping for business growth and the importance of tax compliance for community development and avoiding penalties. Feature success stories of compliant micro-entrepreneurs.	LGU Public Information Office, partnering media outlets, and successful local micro-entrepreneurs	Ongoing/Regular campaigns	Reach of awareness campaigns; Changes in attitudes and perceptions towards bookkeeping and tax compliance reported through surveys or focus groups.
	Directory of local bookkeeping and tax assistance providers	Compile and disseminate a directory of local accountants, bookkeepers, and tax consultants, including affordable or pro bono options, that micro-entrepreneurs can access for professional assistance.	LGU business development office, local accountancy/Legal associations	Annually updates (with)	Number of micro-entrepreneurs accessing the directory; Feedback on the usefulness of the directory and the services provided.

This table (Table 9) presents an integrated intervention and strategy plan to address barangay micro-entrepreneurs' identified needs and problems in Nueva Ecija. It promotes training within reach, simplified materials, peer learning, and the use of local resources to promote better bookkeeping and tax behavior. The KPIs can be used to track and assess the impact on the effectiveness of such interventions over time. Understanding these factors can help policymakers and supporting institutions customize minimal interventions to improve tax compliance among this crucial economic group (Cardenas & Codnita, 2024). Internal and External Working for the Enhancement of Micro, Small, and Medium Enterprises Tax Compliance Internal and external arrangement and proper management of all the factors may bring all of these factors help promote voluntary compliance with tax obligations (Cardenas & Codnita, 2024).

A multi-faceted intervention and strategy are being developed to address the challenges in bookkeeping knowledge, skills, and tax compliance among barangay micro-entrepreneurs in Nueva Ecija. The focus is on barangay-based basic bookkeeping workshops, as patterns of moderate financial literacy levels are being identified. Such workshops can enhance understanding and implementation by using local language and real-time context, aligning with effective adult learning principles. Step-by-step recordkeeping toolkits and guides are also being facilitated. Additionally, providing simplified recordkeeping toolkits and guides helps increase capacity by offering practical resources that can be applied in daily business activities. V: Establishing Peer-to-Peer Learning Sessions: Peer-to-peer learning creates a supportive environment where entrepreneurs can exchange notes, learn from the successes and failures of others, and develop confidence in their ability to record financial information (Johan & Asiri, 2024).

Moreover, the strategy also acknowledges social learning through peer-to-peer class discussions. Peer-to-peer knowledge dissemination between experienced and inexperienced entrepreneurs is important, as it bridges the gap and offers knowledge from a place of experience and practicality within a specific setting. The importance of utilizing technology among mobile-based bookkeeping apps is also a rectification of the issue of accessibility and convenience. This method can be especially useful in addressing the time restrictions of bookkeeping by demonstrating how fellow farmers manage in a timely and easy manner.

The barangay-level tax clinics and the simplified tax guides are also essential to deal with the intricacy of fulfilling tax requirements, recognized as one of the top obstacles to compliance in the results. Direct contact with tax authorities and clear, local language literature can "demystify the tax field and raise awareness about obligations" (Organisation for Economic Co-operation and Development (OECD), 2019). In addition, helping businesses in the early stages to register and apply for TIN can formalize businesses and integrate them into the tax system. In the long run, this could enhance compliance. It can make participants realize the usefulness of financial records, which they are eager to download and install financial recording applications. Participants feel that these applications can help record financial documents in the future (Nugraha, Apriani, Fitriani, Mulya, & Ani, 2022).

The addition of a financial mentoring program is intended to change this and offer long-term, tailored advice to remedy the perceived gap in inappropriate financial management knowledge. The mentors can provide personalized guidance for their business needs, helping reinforce training and assisting entrepreneurs in navigating specific bookkeeping and tax issues. Public education campaigns can also help create a positive attitude towards bookkeeping and taxation, with their benefits for entrepreneurship and community development emphasizing this. The function of bookkeeping should be recognized for the efficiency gained (Daniel, 2023).

Finally, developing a list of local bookkeeping and tax-filing services recognizes that some micro-businesses will require professional assistance. Giving students access to these resources is valuable in closing the knowledge gap and allowing for informed financial management and tax compliance. A finance recording Android-based application would facilitate the recording of financial reports and avoid errors in recording (Elmanda, Merdikawati, & Wahyuni, 2022).

If implemented in partnership with the LGUs, BSO, and the micro-entrepreneurs, the interventions can provide a holistic approach to improving financial literacy and increasing compliance with taxation among the barangay micro-enterprise sector in Nueva Ecija. However, adopting these measures would depend on access to, exposure to, and continued use of them and on the active involvement of potential users. What MSME owners can observe, then, are the physical state and evolution of the business, not the company's profits and losses (Rohaeni, Wijayarti, Yunita, & Pardamean, 2022).

5. CONCLUSION

The current research examined the extent of knowledge and skills in bookkeeping among barangay micro-entrepreneurs in Nueva Ecija and probed their correlation with tax compliance practices. Results based on the interpretation of the survey data indicate that the participants' level of bookkeeping knowledge and skills was mostly moderate to high, but at a moderate level in terms of tax compliance practice. Most notably, statistically significant, moderate positive relationships were established between bookkeeping knowledge and bookkeeping skills with tax compliance, which confirms that more knowledge about and skill in the use of financial management principles is positively correlated with compliance with tax laws. The study also found some issues and obstacles experienced by these micro-entrepreneurs, such as the perceived time consumption of bookkeeping, limited knowledge of financial management, the perceived complexity of tax compliance, and the inability to distinguish personal and business procurement. The provision of assistance offered for bookkeeping and tax compliance was not particularly well known.

In summary, bookkeeping knowledge and skills are driving forces in creating tax compliance among barangay micro-entrepreneurs in Nueva Ecija, but adversity hinders their effect, and ignorance of available resources. The findings highlight the importance of targeted interventions, including the provision of accessible and practical financial literacy education, simplified provision of tax information, and increased promotion of existing support. These dimensions may be addressed in such a way as to help micro-entrepreneurs strengthen their capabilities for good financial management and better tax compliance, and thereby contribute to enhanced growth and formalization of this important sector in the local economy of Nueva Ecija and even in the wider Philippine setting. Subsequent research may delve deeper into what types of training and assistance are most effective in moving micro-entrepreneurs from bookkeeping to sustainable tax compliance.

6. RECOMMENDATION

LGUs and business support organizations should undertake short, practical, hands-on workshops on the specific requirements of barangay-level micro-entrepreneurs based on their needs covering basic accounting principles, basic accounting, recordkeeping, and the generation of essential financial summaries. They should work with governments to create plain language brochures, workshops, and online resources explaining what tax is due, when it has to be filed, and where payments should be made, all in accessible linguistic formats, possibly using local dialects. Outreach programs are necessary to alert micro-entrepreneurs to services such as bookkeeping help, tax compliance advice, and financial management, and to inform them how these services will be promoted, including the formation of partnerships with barangay officials, community activities, and sponsorship of commercials in local media. Training and information campaigns should emphasize the benefits of keeping personal and business finances separate, offering practical solutions such as opening a separate business bank account and using simple techniques for tracking finances. Finally, programs should be developed to enable micro-entrepreneurs to become business mentors, with experienced business owners and financial professionals available to support them in maintaining better records and ensuring compliance.

Micro-entrepreneurs are urged to actively seek out and participate in financial literacy training aimed at improving their bookkeeping skills and knowledge. They should keep simple and consistent books to understand how

their business is performing and to support their taxes. Additionally, they should inquire with local authorities about their tax liabilities, research user-friendly bookkeeping tools and software systems to simplify bookkeeping and taxation, and find like-minded business owners to learn how they handle bookkeeping and taxation. By applying these suggestions, various stakeholders could actively collaborate to help the barangay micro-entrepreneurs in Nueva Ecija acquire the necessary information, skills, and assistance to develop their financial management practices. This, in turn, can lead to better tax compliance, which will promote financial sustainability and business expansion.

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Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.

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