Masterpiece Journal Society Service Insight
e-ISSN: 3090-2185 *Page*: 606-619
Volume 2, Issue 2 (2026)

UN as a Partner to Villages: Strengthening Human Resource Capacity and Tax Literacy to Enhance Tax Compliance Among the Residents of East Galesong Village

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Abstract: Tax compliance at the village level, particularly Property Tax (PBB-P2), depends not only on taxpayers' ability to pay but also on their tax literacy, administrative capacity, access to payment channels, and understanding of the benefits of taxation. This community engagement program aimed to strengthen human resource capacity and tax literacy while improving practical understanding of PBB-P2 administration among the community and local government officials in Galesong Timur Village, Takalar Regency, Indonesia. The program employed a Participatory Community Empowerment approach involving interactive lectures, participatory discussions, case studies, administrative simulations, consultation, and pretest-posttest evaluation. The intervention focused on understanding PBB functions and benefits, reading tax assessment notices (SPPT), identifying and validating taxpayer and property data, understanding the Tax Object Sales Value (NJOP), utilizing available payment channels, and maintaining payment records. The evaluation involved 20 participants using a 15-item multiple-choice instrument. The results demonstrated a substantial improvement in participants' knowledge, with the mean score increasing from 6.20 (41.33%) in the pretest to 13.00 (86.67%) in the posttest, representing an increase of 6.80 points or 45.33 percentage points. The mean N-Gain of 0.773 indicated a high level of learning improvement. Paired-samples analysis also confirmed a statistically significant increase ($t(19) = 19.294$, $p < 0.001$), supported by the Wilcoxon test ($W = 210$, $p < 0.001$). The program therefore effectively strengthened immediate PBB literacy and practical understanding, while sustained monitoring is required to assess long-term behavioral compliance.

Keywords : tax literacy; property tax; tax compliance; community empowerment; human resource capacity

1. Introduction

Tax compliance at the local level represents an important component of fiscal capacity, public service provision, and sustainable regional development. Among various forms of local taxation, Property Tax on Rural and Urban Land and Buildings (PBB-P2) has a direct relationship with communities because taxpayers are generally property owners or users who interact with local administrative systems on a recurring basis. Nevertheless, compliance cannot be understood solely as the ability or willingness of taxpayers to make payments. It is influenced by a combination of knowledge, administrative accessibility, service quality, perceptions of tax benefits, trust in government, and the capacity of human resources responsible for providing information and assistance. Consequently, strategies for strengthening tax compliance require approaches that integrate educational, administrative, behavioral, and institutional dimensions rather than relying exclusively on enforcement mechanisms. OECD (2014) emphasizes that tax compliance is shaped by multiple administrative and behavioral factors, indicating the importance of improving the overall taxpayer experience and supporting environment.

Tax literacy is therefore an essential foundation for strengthening voluntary compliance. Taxpayers who understand their rights and obligations are more likely to recognize the importance of timely payment, interpret relevant tax documents, identify administrative problems, and seek appropriate assistance when difficulties arise. Previous studies have associated taxpayer understanding and awareness with PBB payment behavior. Sondakh, Morasa, and Wokas (2013) demonstrated the relevance of taxpayer understanding to PBB compliance, while Simanungkalit (2017), Nini, Susanti, and Ilyas (2022), and Putri and Sulindawati (2024) highlighted the importance of understanding, awareness, administration, and local government management in shaping PBB payment behavior. More broadly, tax literacy encompasses knowledge of tax concepts, regulations, taxpayer rights and obligations, and the practical actions required to fulfill tax responsibilities (Tantriangela & Setyowati, 2023). Musimenta (2020) further indicates that tax knowledge is associated with compliance behavior, while Hauptman, Žmuk, and Pavić (2024) underline the importance of knowledge and perceptions of fairness in influencing taxpayer compliance.

The challenge becomes more complex in rural and village communities, where access to tax information and administrative support may not be equally distributed. Knowing that PBB must be paid annually does not necessarily mean that taxpayers understand how to read a tax assessment notice (SPPT), identify the basis of taxation, understand the Tax Object Sales Value (NJOP), verify taxpayer and property information, recognize changes in ownership or address, or use available payment channels. Such limitations may increase dependence on local officials and create barriers to voluntary compliance. Previous community-based interventions have indicated that education and assistance can serve as important mechanisms for strengthening community awareness and tax literacy (Ermawati et al., 2024; Suhardi et al., 2025; Nugraheni & Pujiati, 2025; Putri & Indy, 2026). Thus, tax education needs to move beyond the transfer of conceptual knowledge toward practical learning that enables taxpayers to understand and manage their obligations more independently.

Human-resource capacity at the village level is equally important because local officials often occupy the closest institutional position to community members. Village officials may become the first point of contact when residents seek clarification about SPPT distribution, taxpayer information, property data, payment procedures, or administrative discrepancies. Strengthening local human resources can therefore improve the quality of communication and facilitate early identification of problems before they require further institutional intervention. Hernita et al. (2021) emphasize the importance of human-resource capacity in enabling organizations and communities to respond to changing environments. In the taxation context, Mariana, Damis, Harun, and Marsuni (2025) associate human-resource competence with tax compliance and the effectiveness of fulfilling tax obligations. This suggests that interventions directed only toward taxpayers may be insufficient if local actors who facilitate information and administrative services are not simultaneously strengthened.

The increasing use of digital payment channels adds another dimension to the challenge. Digitalization has the potential to make tax payments faster, more accessible, and more independent. However, the availability of digital channels does not automatically guarantee their effective utilization. Users require adequate knowledge, confidence, and practical guidance to navigate digital payment procedures. Recent studies indicate that the benefits of tax digitalization are influenced by user readiness and capability (Rifqi et al., 2025; Dariansyah & Suryawan, 2026; Maharani et al., 2026). Therefore, digital tax education should be accompanied by demonstrations and practical assistance rather than simply introducing taxpayers to the existence of digital services. For village communities, this combination is particularly relevant because differences in digital literacy may create new forms of administrative inequality if technological innovation is not supported by appropriate capacity building.

Another important issue concerns the accuracy and reliability of property-tax data. Changes in ownership, taxpayer names, addresses, property size, property functions, or other characteristics may generate discrepancies between actual conditions and administrative records. Similarly, SPPT documents that remain registered under previous owners may create uncertainty and discourage taxpayers from completing their obligations. Modernization of property-tax data and effective governance are therefore important components of a functioning local tax system (Hernandi et al., 2025, 2026). From a community perspective, taxpayers need to understand not only how to pay but also how to recognize potential data problems and identify the appropriate administrative pathway for resolving them. This makes data validation and problem mapping relevant components of community-based tax education.

Trust and perceptions of public benefit also influence the broader context of voluntary compliance. Taxpayers are more likely to perceive taxation positively when they understand the relationship between tax contributions, public services, and local development. Anggawati and Susilowati (2025) identify the relationship among tax understanding, sanctions, trust in government, and PBB compliance, while Shelvi and Rachmawati (2026) emphasize the importance of public trust for future taxpayer compliance. Accordingly, tax education should not frame PBB merely as an administrative obligation or financial burden. Instead, it should help communities understand taxation as a contribution to collective development and public services. Such a perspective may strengthen the social meaning of compliance and support the development of voluntary rather than purely enforcement-driven behavior.

These conditions are particularly relevant in Galesong Timur Village, Takalar Regency, where the strengthening of PBB compliance requires an integrated approach involving taxpayers, community members, and village officials. The identified partner problems include limited tax literacy, the need to strengthen local human-resource capacity, administrative and property-data challenges, uneven utilization of digital payment channels, and the need to continuously build voluntary awareness and public trust. The intervention therefore needs to address both knowledge and practical capability. The program developed for this purpose, **PBB Sahabat Desa**, integrates tax education, human-resource capacity building, administrative assistance, data-validation awareness, digital-payment guidance, participatory discussion, and consultation.

The distinctive feature of the program lies in its participatory community empowerment orientation. Rather than positioning residents as passive recipients of information, the intervention involves participants through interactive questions, experience-based discussions, case studies, simulations, reflection, and evaluation. The approach is designed to connect conceptual understanding with practical skills in reading SPPT, recognizing NJOP-related information, identifying data that require validation, understanding payment channels, and maintaining payment evidence. In addition, the program introduces the concept of a **PBB Sahabat Desa Clinic** as a consultation and problem-mapping mechanism. This mechanism is intended not to replace the authority of taxation institutions but to help communities classify problems and determine appropriate follow-up pathways.

Despite the growing discussion of tax literacy, digitalization, taxpayer awareness, and community education, there remains a practical need for integrated village-level interventions that simultaneously strengthen taxpayer knowledge and the capacity of local human resources while addressing administrative and digital-payment barriers. The present program responds to this need by combining education, simulation, consultation, and participatory evaluation within a single community empowerment framework. Its contribution is therefore not limited to delivering tax information but also to establishing a practical model through which village officials and community members can collaboratively improve tax-related knowledge and administrative capability.

Accordingly, this community engagement program aims to strengthen the capacity of local human resources and improve tax literacy among the community and PBB taxpayers in Galesong Timur Village. More specifically, the program seeks to improve participants' understanding of the functions, benefits, rights, and obligations associated with PBB-P2; strengthen their ability to interpret SPPT and basic property-tax information; improve awareness of data validation and administrative problem-solving pathways; increase familiarity with available payment channels, including digital mechanisms; and encourage voluntary compliance through improved understanding of tax benefits, service accessibility, and trust. The effectiveness of the intervention is subsequently assessed through pretest and posttest measurements, supported by practical simulations and participatory reflection, to determine whether the program produces an immediate improvement in participants' tax-related knowledge and understanding.

2. Research Methodology

2.1 Research Design and Community Engagement Approach

This community engagement program employed a Participatory Community Empowerment (PCE) approach combined with a one-group pretest–posttest design to evaluate changes in participants' knowledge and practical understanding of rural property tax (PBB-P2). The participatory approach was selected because the intervention was intended not merely to transfer information but also to strengthen participants' ability to identify administrative problems, interpret tax documents, understand payment procedures, and provide or access appropriate assistance. Participants were actively involved through guided questions, experience-sharing discussions, case analysis, practical simulations, consultation, reflection, and evaluation. This approach is consistent with the program's objective of developing practical capacity rather than focusing exclusively on knowledge acquisition.

The intervention followed a sequential process consisting of initial coordination, baseline assessment, educational intervention, human-resource capacity building, administrative and payment simulation, case-based consultation, post-intervention assessment, and follow-up planning. The overall intervention logic was structured as pretest → education → case discussion → simulation → consultation → posttest → follow-up. The immediate outcomes targeted by the program were improved PBB-P2 knowledge, ability to interpret SPPT, understanding of payment procedures, and capacity to identify administrative problems.

2.2 Setting and Participants

The program was conducted on 12 August 2026 in Galesong Timur Village, Galesong Timur District, Takalar Regency, Indonesia, in collaboration with the Galesong Timur Village Government. The participants consisted of village officials, community members, and local taxpayers. A total of 20 participants took part in the pretest and posttest evaluation. The intervention was implemented by the Community Engagement Team of the Faculty of Economics and Business, Universitas Muhammadiyah Makassar, with the village government serving as a facilitating and follow-up partner. Participant involvement was designed to be interactive. The village government facilitated communication and access to the community, while the community engagement team prepared the educational materials, delivered the intervention, administered the evaluation instruments, and formulated follow-up recommendations. Participants contributed by sharing their experiences and difficulties concerning SPPT distribution, taxpayer and tax-object data, ownership changes, and payment access.

2.3 Intervention Components

The intervention consisted of several complementary educational and empowerment methods. First, interactive lectures were used to introduce the basic concepts of PBB-P2, the functions and benefits of taxation, taxpayer rights and obligations, SPPT, administrative procedures, and the contribution of property taxes to local development and public services. Second, participatory discussions were conducted to identify participants' previous experiences and practical difficulties related to PBB-P2 payments, SPPT, changes in taxpayer or property information, and access to tax services. Third, case-based learning was applied to discuss realistic administrative problems, including discrepancies in taxpayer or tax-object data, changes in property ownership, delayed payments, and payment barriers.

Fourth, practical simulations were conducted to develop participants' ability to read basic information contained in SPPT, understand NJOP-related information, identify data requiring validation, recognize available payment channels, and maintain payment evidence. Fifth, consultation and mentoring were provided through the PBB Sahabat Desa Clinic. The clinic functioned as a problem-mapping and consultation mechanism rather than replacing the authority of the relevant tax institution.

Problems were classified into literacy-related issues, payment-channel difficulties, taxpayer or tax-object data problems, ownership changes, SPPT distribution problems, and cases requiring coordination with the competent authorities.

2.4 Measurement Instrument

The effectiveness of the intervention was assessed using a 15-item multiple-choice knowledge test administered before and after the educational intervention. The same instrument was used for the pretest and posttest to measure changes in participants' immediate understanding. The questions covered several dimensions of PBB-P2 literacy, including the basic concept and function of property taxation, taxpayer rights and obligations, tax benefits, SPPT interpretation, NJOP, administrative data validation, payment mechanisms, digital payment channels, and tax compliance. Each correct answer was assigned one point, producing a possible score ranging from 0 to 15. The total score was subsequently converted into a percentage to facilitate interpretation of participants' knowledge levels before and after the intervention. The instrument was administered under the same general conditions at both measurement points. The pretest was conducted before the educational intervention to establish participants' baseline knowledge, whereas the posttest was administered immediately after the intervention to identify changes in knowledge attributable to the program.

2.5 Implementation Procedure

The implementation consisted of eight sequential stages. Stage 1: Coordination and preparation. The team coordinated with the Galesong Timur Village Government regarding participant needs, target groups, implementation schedules, educational materials, evaluation instruments, and logistical preparation. Stage 2: Baseline assessment. Participants completed the 15-item pretest to identify their initial level of understanding concerning PBB-P2, tax literacy, tax benefits, data validation, digital payments, NJOP, and compliance. Stage 3: Educational intervention. The main educational session was delivered through interactive presentations focusing on PBB-P2 literacy and the reframing of tax obligations as contributions to local development. Stage 4: Local human-resource capacity building. Particular attention was given to strengthening the capacity of village-level personnel to communicate tax information, provide basic assistance, identify taxpayer problems, and refer cases requiring institutional intervention. Stage 5: Administrative and payment simulation. Participants practiced interpreting SPPT, identifying information requiring validation, understanding payment channels, and maintaining proof of payment. Stage 6: Case discussion and consultation. Participants discussed practical problems concerning taxpayer and tax-object data, SPPT distribution, ownership changes, and payment access. Stage 7: Posttest and reflection. The same 15-item instrument was administered after the intervention. A reflection session was subsequently conducted to identify remaining difficulties and practical needs. Stage 8: Follow-up recommendations. The program formulated recommendations for periodic tax education, continuation of the PBB Sahabat Desa Clinic, collaborative data validation, promotion of digital payment channels, and development of local community facilitators.

2.6 Data Analysis

The quantitative analysis focused on changes in participants' knowledge between the pretest and posttest. Descriptive statistics were used to calculate the mean score and percentage of correct responses at each measurement point. The N-Gain score was used to assess the relative improvement in participants' knowledge compared with the maximum possible improvement. To test whether the difference between pretest and posttest scores was statistically significant, a paired-samples t-test was applied. Because the sample consisted of only 20 participants and a non-parametric robustness check was considered appropriate, the Wilcoxon signed-rank test was also employed. Statistical significance was evaluated at an alpha level of 0.05. In addition to statistical significance, Cohen's (d_z) was calculated to estimate the magnitude of the intervention effect on participants' immediate knowledge outcomes. The analysis was interpreted primarily as an assessment of short-term educational effectiveness. Changes in test scores were not treated as direct evidence of long-term tax payment behavior or sustained PBB-P2 compliance. Such behavioral outcomes would require follow-up measurement after the intervention.

2.7 Ethical and Practical Considerations

The activity was implemented as a community empowerment program in collaboration with the local village government. Participation in the educational and evaluation activities was conducted within the context of the community engagement program. The intervention emphasized education, facilitation, and problem identification rather than tax enforcement or collection. In particular, the PBB Sahabat Desa Clinic was positioned as a mechanism for improving understanding and directing participants toward appropriate administrative solutions, while matters falling under the authority of taxation institutions were referred to the relevant authorities. This methodological design enabled the program to combine knowledge assessment, participatory learning, practical simulation, and community consultation within a single intervention framework. Consequently, the evaluation captured both measurable changes in immediate knowledge and qualitative evidence concerning participants' practical difficulties in understanding and managing PBB-P2 obligations.

3. Results and Discussion

3.1 Participant Characteristics and Program Implementation

The PBB Sahabat Desa program was implemented in Galesong Timur Village, Takalar Regency, on 12 August 2026, in collaboration with the local village government. The activity involved 20 participants, consisting of 17 women and 3 men. The participants represented village officials, community members, and local PBB-P2 taxpayers. The involvement of both local government personnel and taxpayers was important because the program was designed to address PBB-P2 literacy at both the service and community levels. The intervention was implemented using a participatory model that combined interactive lectures, participatory discussions, case-based learning, administrative simulations, consultation, and pretest–posttest evaluation. The implementation process followed a structured sequence beginning with coordination and baseline assessment, followed by educational intervention, local human-resource capacity building, practical simulation, case discussion, post-intervention evaluation, and follow-up planning.

The educational intervention focused on five interrelated areas: understanding the function and benefits of PBB-P2, improving tax literacy, strengthening the capacity of local human resources, improving administrative understanding, and introducing payment channels including digital options. This integrated structure was important because tax literacy cannot be effectively strengthened when taxpayers only receive information about payment obligations without understanding the documents, administrative procedures, available services, and broader social benefits associated with taxation. The participatory component also enabled participants to relate the material to actual problems encountered in the village. Discussions addressed issues involving taxpayer and tax-object data, SPPT distribution, changes in ownership, payment access, and administrative discrepancies. Thus, the intervention moved beyond conventional one-way tax education toward a practical problem-solving model.

3.2 Changes in Participants' Knowledge

The primary quantitative outcome was the change in participants' knowledge between the pretest and posttest. The results demonstrate a substantial improvement following the intervention. The mean pretest score was 6.20 out of 15, equivalent to 41.33%, whereas the mean posttest score increased to 13.00 out of 15, equivalent to 86.67%. The mean improvement was therefore 6.80 points, or 45.33 percentage points. Importantly, all 20 participants experienced an increase in their individual scores. The distribution of scores further confirms the consistency of the improvement. Before the intervention, participants' scores ranged from 2 to 9 out of 15, corresponding to 13.3%–60.0%. After the intervention, scores ranged from 11 to 15, equivalent to 73.3%–100.0%. Therefore, the improvement was not attributable only to a small number of high-performing participants; rather, it occurred across the entire participant group.

The magnitude of improvement was also assessed using the normalized gain (N-Gain). The mean N-Gain score was 0.773, which falls within the high category under the commonly used Hake classification. This indicates that the intervention produced a strong immediate improvement relative to the maximum possible improvement.

Table 1. Pretest and Posttest Knowledge Outcomes

Indicator	Pretest	Posttest	Change
Mean score	6.20/15	13.00/15	+6.80
Percentage	41.33%	86.67%	+45.33 pp
Minimum score	2	11	+9
Maximum score	9	15	+6
Mean N-Gain	–	0.773	High

The findings indicate that the PBB Sahabat Desa intervention was effective in increasing participants' immediate understanding of PBB-P2. More importantly, the magnitude of the improvement suggests that the combination of explanation, discussion, practical examples, and simulation was more useful than relying solely on informational delivery.

3.3 Statistical Evidence of Intervention Effectiveness

To determine whether the observed improvement was statistically meaningful, the difference between pretest and posttest scores was tested using a paired-samples t-test. The analysis produced $t(19) = 19.294$, $p < 0.001$, indicating a statistically significant increase in knowledge following the intervention. A Wilcoxon signed-rank test was also employed as a non-parametric robustness check and produced $W = 210$, $p < 0.001$. Both statistical procedures therefore provide consistent evidence that participants' posttest scores were significantly higher than their pretest scores. The effect size provides an additional perspective. The calculated Cohen's (d_z) was 4.31, indicating a very large intervention effect on immediate knowledge outcomes. This is substantially beyond what would normally be described as a small or moderate educational effect. The combination of statistical significance, large effect size, and the fact that all participants improved strengthens the evidence that the educational intervention produced a meaningful immediate change. However, statistical significance should not be interpreted as evidence that the program automatically generated long-term tax compliance. The evaluation measured knowledge immediately before and after the intervention. Consequently, the results demonstrate short-term educational effectiveness, rather than establishing a causal effect on actual annual PBB payment behavior. The distinction is important because knowledge represents an important prerequisite for compliance but does not necessarily translate directly into sustained behavior.

3.4 Item-Level Improvement and Tax Literacy Dimensions

The item-level analysis provides further insight into which areas benefited most from the intervention. Before the program, the lowest proportion of correct responses was recorded for items 4 and 14, with only 25% of participants answering each correctly. Other relatively weak items included items 5, 12, and 15. Following the intervention, the proportion of correct responses across the items increased to approximately 80%–90%. This pattern is important because the weaker areas were not limited to basic definitions of PBB. They included concepts related to tax compliance, administrative order, and voluntary compliance. This suggests that participants' initial knowledge may have been sufficient to recognize PBB as an annual obligation but insufficient to understand the broader processes and reasoning underlying effective compliance.

The improvement therefore reflects a broader form of tax literacy. Participants were exposed not only to information concerning tax obligations but also to the practical relationship between taxation, administration, payment mechanisms, and public benefits. The intervention included explanations of SPPT, NJOP, data validation, payment channels, payment evidence, and the contribution of PBB to local development. This finding supports the argument that tax literacy should be approached as a multidimensional capability rather than as the simple ability to calculate or pay tax. In a rural setting, taxpayers may face practical difficulties in interpreting tax documents, identifying inaccurate information, understanding changes in property ownership, or selecting payment channels. Consequently, improving literacy requires both conceptual knowledge and practical competence.

3.5 Strengthening Local Human-Resource Capacity

A second important finding concerns the role of local human resources. The program positioned village officials not merely as administrative actors but as potential local tax-literacy facilitators. This role is particularly relevant in rural communities where village officials are often more accessible to residents than formal tax institutions. The intervention therefore strengthened several practical capacities, including the ability to communicate basic PBB information, identify taxpayer problems, explain administrative procedures, provide initial assistance, and direct unresolved cases to the appropriate authority. The program specifically emphasized that village-level assistance should facilitate understanding and problem identification rather than replace the formal authority of taxation institutions. This model creates an important institutional bridge between taxpayers and the tax administration system. When taxpayers encounter problems involving SPPT, ownership, addresses, property data, or payment channels, uncertainty can become a barrier to compliance. Local human resources with sufficient knowledge can reduce this uncertainty by providing initial explanations and directing taxpayers toward appropriate administrative solutions. Thus, the contribution of the program extends beyond the improvement of individual knowledge. It also establishes a potential community-based support mechanism through which tax literacy can be reproduced after the intervention has ended.

3.6 Administrative Literacy and Digital Payment Readiness

The results also demonstrate the importance of integrating tax literacy with administrative and digital capabilities. PBB compliance may be constrained when taxpayers encounter discrepancies in taxpayer names, ownership information, addresses, property areas, or SPPT records. The program therefore incorporated practical exercises concerning data validation and identification of administrative problems. Similarly, digital payment channels were introduced as part of the intervention. The objective was not simply to encourage digitalization but to increase taxpayers' ability to use available payment mechanisms independently. The program recognized that digital technology cannot automatically improve compliance when users lack the knowledge or confidence necessary to operate the system. This finding has an important practical implication. Digital tax services should be accompanied by digital literacy and assisted demonstrations, particularly in communities where levels of technological familiarity vary. A digital payment system may reduce transaction costs, but its effectiveness depends on whether taxpayers understand how to access, use, and verify the transaction. The program's emphasis on maintaining payment evidence is also relevant to administrative accountability. Proper documentation enables taxpayers to retain evidence of compliance and can facilitate the resolution of future administrative discrepancies.

3.7 From Tax Obligation to Voluntary Compliance

An important conceptual contribution of the PBB Sahabat Desa program is its attempt to shift the perception of PBB from a purely compulsory payment into a contribution associated with local development and public services. This approach is particularly relevant because compliance cannot sustainably depend only on enforcement or sanctions. During the intervention, tax education was linked to the benefits of taxation, service accessibility, administrative clarity, and public trust. The program consequently adopted a more persuasive rather than coercive model of compliance. The intended mechanism is that greater understanding reduces uncertainty, improved service facilitates action, and clearer connections between taxation and public benefits strengthen willingness to comply. The program documentation similarly identifies improved service accessibility, taxpayer independence, and trust as intermediate outcomes, with stronger awareness and PBB compliance as longer-term intended impacts. Nevertheless, this pathway should be interpreted as a theoretical and programmatic mechanism, rather than as a directly tested causal pathway in the present evaluation. The current data demonstrate substantial gains in knowledge but do not include a subsequent measurement of actual payment behavior, taxpayer trust, or long-term compliance. Future evaluation should therefore examine whether improved literacy is translated into timely payment and better administrative practices.

3.8 Discussion of the Overall Program Effectiveness

Taken together, the findings demonstrate that the PBB Sahabat Desa model generated a substantial immediate improvement in participants' PBB-P2 knowledge. The increase from 41.33% to 86.67%, the high N-Gain score of 0.773, the statistically significant paired comparison, and the very large effect size collectively indicate strong short-term educational effectiveness.
The strength of the program appears to lie in its integrated design. Rather than treating tax literacy as a one-way information-transfer problem, the intervention combined knowledge transfer, participatory dialogue, practical simulation, administrative problem identification, and consultation. This design allowed participants to connect abstract tax concepts with situations that they could encounter in their daily interactions with PBB administration. The findings also suggest that interventions in rural tax contexts should consider three complementary dimensions: individual literacy, institutional capacity, and service accessibility. Individual taxpayers need sufficient knowledge to understand their obligations; local human resources need sufficient capacity to provide basic assistance; and administrative and payment systems need to be accessible enough to translate knowledge into action.
Accordingly, the program can be conceptualized as a community-based tax-literacy intervention in which improved knowledge serves as the immediate outcome and stronger voluntary compliance represents the longer-term objective. The intervention logic is therefore:
Tax education + local HR capacity + administrative assistance + payment literacy → improved knowledge and practical capability → greater service accessibility and taxpayer independence → stronger potential for voluntary PBB compliance.

This interpretation is consistent with the program's broader intervention framework, which identifies improved understanding, SPPT literacy, payment knowledge, and problem mapping as immediate outputs, while improved service accessibility, taxpayer independence, and trust are positioned as intermediate outcomes.

3.9 Sustainability and Implications

The findings indicate that maintaining the benefits of the intervention requires activities beyond the one-day educational session. The program therefore recommends periodic village-level PBB education, continued operation of the PBB Sahabat Desa Clinic, development of local facilitators, gradual tax-data validation, continued demonstrations of digital payment channels, and periodic university monitoring. From a practical perspective, the PBB Sahabat Desa model can be adapted as a recurring village-level tax-literacy mechanism. The educational materials and 15-item evaluation instrument can be reused to identify changes in community knowledge, while the clinic can function as a structured channel for identifying administrative problems and determining appropriate referrals. For future assessment, however, a longer observation period is required. Follow-up data should ideally include actual PBB payment records, timeliness of payment, resolution of administrative problems, use of digital payment channels, and changes in taxpayer perceptions of government services. Such longitudinal evidence would allow future research to determine whether the substantial immediate knowledge gains observed in this program are translated into sustained behavioral compliance.

Overall, the findings demonstrate that community-based tax education can produce a substantial immediate improvement in PBB-P2 knowledge when education is combined with practical simulation, participatory discussion, administrative assistance, and local human-resource strengthening. The program's principal contribution is therefore not simply the delivery of tax information but the development of a localized mechanism for transforming tax knowledge into practical capability and creating the conditions for stronger voluntary compliance over time.

4. Conclusions

4.1 Main Findings

The PBB Sahabat Desa program demonstrated a substantial improvement in participants' immediate knowledge and practical understanding of PBB-P2. Among the 20 participants, the mean knowledge score increased from 6.20 out of 15 (41.33%) in the pretest to 13.00 out of 15 (86.67%) in the posttest, representing an improvement of 6.80 points or 45.33 percentage points. All participants demonstrated higher posttest scores than their respective pretest scores. The mean N-Gain of 0.773 was classified as high, indicating that the intervention generated a strong immediate learning gain. The statistical results further support the effectiveness of the intervention. The paired-samples t-test indicated a statistically significant difference between pretest and posttest scores, $t(19) = 19.294$, $p < 0.001$, while the Wilcoxon signed-rank test produced a consistent result, $W = 210$, $p < 0.001$. The calculated Cohen's (d_z) of 4.31 indicates a very large effect on participants' immediate knowledge outcomes.

4.2 Contribution to Tax Literacy and Community Capacity

The findings indicate that strengthening tax literacy through participatory and practice-oriented education can substantially improve participants' understanding of PBB-P2. The intervention addressed not only basic tax concepts but also SPPT interpretation, NJOP, taxpayer rights and obligations, data validation, payment procedures, digital payment channels, payment evidence, and the relationship between taxation and local development. An important contribution of the program is the integration of individual tax literacy with local human-resource capacity. Village officials were positioned as potential facilitators who can help residents understand tax information, identify administrative problems, and access appropriate services. This approach creates a community-based support mechanism that can potentially sustain tax education beyond the implementation of a single intervention.

4.3 Practical and Institutional Implications

The results have several practical implications for village-level tax administration. First, tax education should be delivered in a practical and participatory manner rather than relying exclusively on one-way information dissemination. Second, village-level human resources should receive sufficient capacity building to provide basic tax information and facilitate communication between taxpayers and relevant authorities. Third, administrative assistance should be integrated into tax-literacy programs because difficulties concerning taxpayer data, ownership, addresses, property information, and SPPT can become practical barriers to compliance. The findings also highlight the importance of combining tax literacy with digital payment literacy. Although digital channels can facilitate payment, taxpayers need sufficient knowledge and confidence to use them effectively. The program therefore recommends continued demonstrations and assistance in the use of digital payment channels, together with appropriate administrative guidance. At the institutional level, the PBB Sahabat Desa Clinic provides a potentially replicable mechanism for maintaining consultation, problem identification, and referral services. Its function is not to replace formal tax authorities but to help communities understand problems and determine appropriate follow-up actions.

4.4 Limitations

Despite the strong improvement observed, several limitations should be considered when interpreting the findings. First, the program involved only 20 participants, limiting the generalizability of the findings to the wider population of taxpayers in Galesong Timur or other rural communities. Second, the evaluation employed a one-group pretest–posttest design without a comparison or control group. Therefore, the observed improvement cannot be attributed exclusively to the intervention with the same level of causal certainty as a controlled experimental design. Third, the posttest was administered immediately after the educational intervention. The findings therefore primarily represent short-term changes in knowledge, rather than evidence of sustained behavioral change. In particular, the N-Gain score, although high, should not be interpreted as a direct measure of long-term PBB payment compliance. The existing evaluation establishes substantial improvement in knowledge but does not yet demonstrate whether participants subsequently pay PBB more regularly or resolve administrative problems more effectively.

4.5 Recommendations and Future Directions

Future implementation should move from short-term educational evaluation toward longitudinal community-based monitoring. The village government and community partners can conduct periodic PBB education, maintain the PBB Sahabat Desa Clinic, develop local tax-literacy facilitators, and gradually conduct collaborative validation of taxpayer and tax-object data. Continued demonstrations of digital payment channels should also be provided to strengthen taxpayer independence. Future research should employ larger samples, comparison groups, and longer observation periods to examine whether improvements in tax knowledge are translated into actual compliance behavior. Follow-up indicators may include the timeliness of PBB payments, completion of administrative corrections, utilization of digital payment channels, taxpayer confidence, perceptions of service quality, and trust in local government.

In conclusion, the PBB Sahabat Desa model provides evidence that an integrated community empowerment strategy combining tax literacy, local human-resource strengthening, administrative assistance, practical simulation, and payment literacy can generate substantial immediate improvements in PBB-P2 knowledge. Its longer-term value will depend on the ability of village institutions and community partners to sustain the intervention and translate improved knowledge into consistent administrative practices and voluntary tax compliance.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to the Government of Galesong Timur Village, particularly the Village Head, Danu Ardiansyah, S.Kom., and the Village Secretary, Rian Firmansyah, S.M., for their institutional support, cooperation, and facilitation throughout the implementation of the community engagement program. The authors also extend their appreciation to all participants, including village officials, community members, and PBB taxpayers, for their active participation, constructive discussions, and valuable contributions during the educational, simulation, consultation, and evaluation activities. Special appreciation is also extended to the Faculty of Economics and Business, Universitas Muhammadiyah Makassar, for providing institutional support and facilitating the implementation of the "PBB Sahabat Desa" community engagement program. The authors are grateful to all parties who contributed directly or indirectly to the successful implementation of this program.

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